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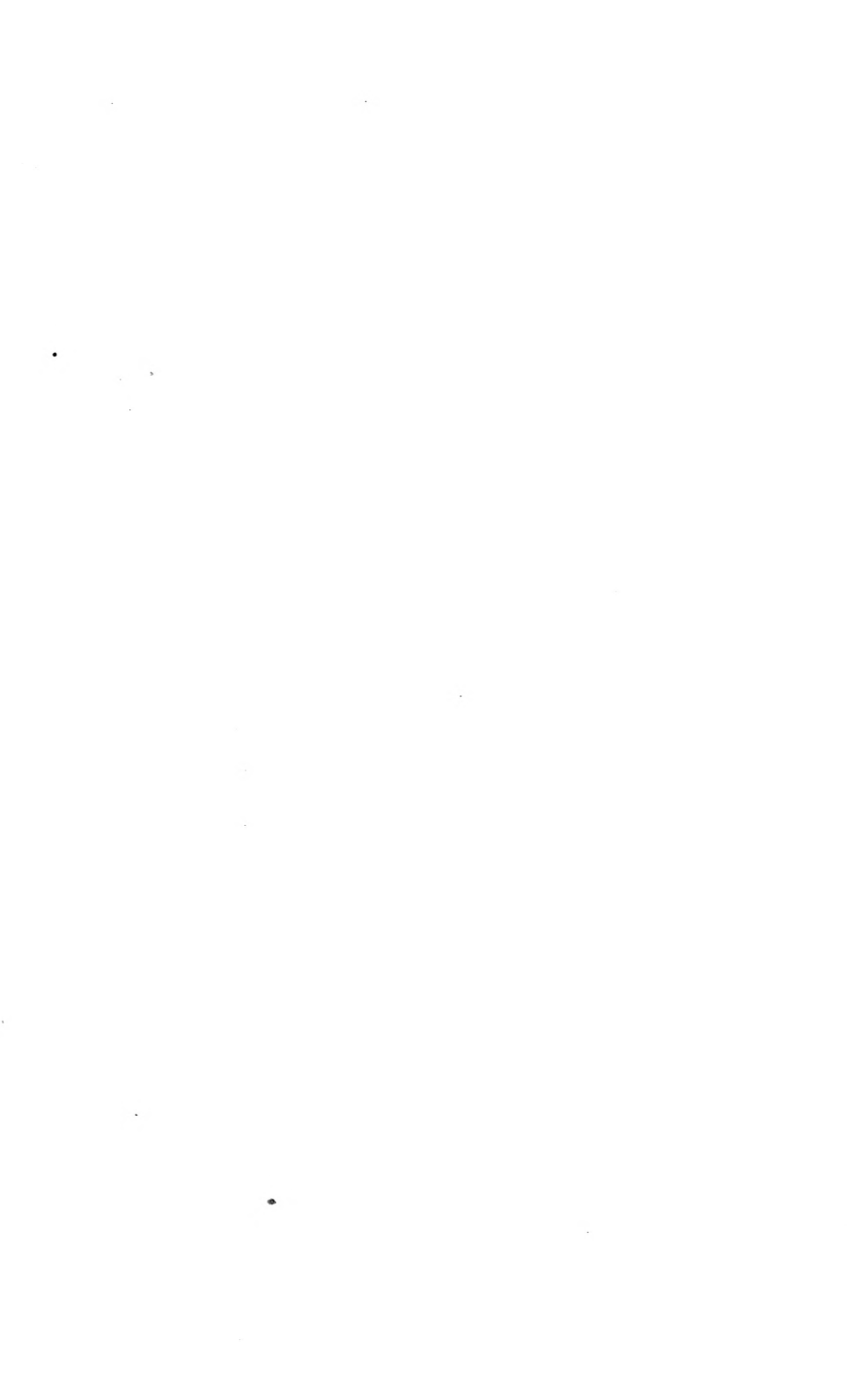
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SIXTY-FIFTH ANNUAL REPORT
OF THE
MASSACHUSETTS
STATE BOARD OF AGRICULTURE.

PART I.

REPORT OF SECRETARY AND OTHER OFFICERS.

1917.



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STATE BOARD OF AGRICULTURE, 1918.

Members ex Officio.

HIS EXCELLENCY SAMUEL W. McCALL.
 KENYON L. BUTTERFIELD, *President Massachusetts Agricultural College.*
 LESTER H. HOWARD, *Commissioner of Animal Industry.*
 F. WILLIAM RANE, *State Forester.*
 WILFRID WHEELER, *Secretary of the Board.*

Members appointed by the Governor and Council.

	Term expires ¹
HENRY M. HOWARD of Newton (P. O., West Newton),	1920
EDWARD E. CHAPMAN of Ludlow,	1918
FRANK P. NEWKIRK of Easthampton,	1919

Members chosen by the Incorporated Societies.

<i>Amesbury and Salisbury (Agricultural and Horticultural),</i>	A. WILLIS BARTLETT of Salisbury,	1920
<i>Barnstable County,</i>	JOHN BURSLEY of Barnstable (P. O. West Barnstable),	1918
<i>Blackstone Valley,</i>	JACOB A. WILLIAMS of Northbridge,	1920
<i>Deerfield Valley,</i>	STEPHEN W. HAWKES of Charlemont,	1919
<i>Eastern Hampden,</i>	OMER E. BRADWAY of Monson,	1920
<i>Essex,</i>	GEORGE L. AVERILL of Andover,	1919
<i>Franklin County,</i>	GEORGE E. TAYLOR, Jr., of Shelburne,	1918
<i>Hampshire,</i>	HOWARD A. PARSONS of Amherst (P. O., North Amherst),	1918
<i>Hampshire, Franklin and Hampden,</i>	CLARENCE E. HODGKINS of Northampton,	1920
<i>Highland,</i>	HARRY A. FORD of Dalton,	1919
<i>Hillside,</i>	MILTON S. HOWES of Cummington (P. O., Swift River),	1919
<i>Hingham (Agricultural and Horticultural),</i>	URBAN S. BATES of Hingham,	1920
<i>Hoosac Valley,</i>	NATHAN B. FLOOD of North Adams,	1920
<i>Housatonic,</i>	FRED M. FORD of Sheffield,	1920
<i>Lenox Horticultural,</i>	ALFRED H. WINGETT of Lenox,	1919
<i>Marshfield (Agricultural and Horticultural),</i>	WALTER H. FAUNCE of Kingston,	1920
<i>Martha's Vineyard,</i>	JAMES F. ADAMS of West Tisbury,	1918
<i>Massachusetts Horticultural,</i>	SAMUEL J. GODDARD of Framingham,	1920
<i>Massachusetts Society for Promoting Agriculture,</i>	NATHANIEL I. BOWDITCH of Framingham,	1920
<i>Middlesex North,</i>	GEORGE W. TRULL of Tewksbury (P. O., Lowell, R. F. D.),	1919
<i>Nantucket,</i>	CHARLES E. BURGESS of Nantucket,	1920
<i>Oxford,</i>	JOHN F. FREELAND of Sutton,	1918
<i>Plymouth County,</i>	ERNEST LEACH of Bridgewater,	1919

¹ First Tuesday in December.

	Term expires ¹
Quannapoicitt,	CALVERT H. PLAYDON, D.V.S., of Reading, 1918
Union,	EDWIN F. GOODWIN of Chester (P. O. Huntington), 1920
Westport,	CHARLES R. TALLMAN of Westport (P. O., South Westport), 1920
West Taunton,	CHARLES I. KING of Taunton, 1919
Weymouth (Agricultural and Horticultural),	HOWARD H. JOY of Weymouth (P. O., South Weymouth), 1920
Worcester,	CHARLES H. ELLSWORTH of Worcester, . 1919
Worcester North (Agricultural and Driving Association),	HENRY D. CLARK, D.V.S., of Fitchburg, . 1920
Worcester Northwest (Agricultural and Mechanical),	ALBERT ELLSWORTH of Athol, 1918
Worcester South,	WILLIAM E. PATRICK of Warren, . . . 1918
Worcester County West,	LOUIS H. RUGGLES of Hardwick, . . . 1919

Member chosen by the Massachusetts Federation of County Leagues and Farm Bureaus.

L. L. RICHARDSON of Leominster,	1918
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¹ First Tuesday in December.

The Commonwealth of Massachusetts.

SIXTY-FIFTH ANNUAL REPORT

OF THE

MASSACHUSETTS STATE BOARD OF AGRICULTURE.

PART I.

REPORT OF THE SECRETARY FOR THE YEAR 1917.

*To the Senate and House of Representatives of the Commonwealth of
Massachusetts.*

To write the agricultural history of 1917 would be as difficult as it is to write the political history of the same time, for our perspective is so shortened by the near view that we are apt to treat essentials as non-essentials, and *vice versa*.

In the beginning of the year our nearness to the great war was making itself felt in many ways, — prices of all commodities were going up; there was a general unrest in all branches of industry; labor troubles were numerous; and our government was striving to keep the country out of the general conflagration that was devouring the world. Agriculture was feeling the added burdens severely; not alone had crops been uncertain, but materials common to the needs of agriculture were increasing rapidly in price, and the labor market, never too sure, was upset to a degree rarely experienced in our country.

Early in the spring the war came, and with it a demand upon the agricultural resources of the country such as it had never experienced before. We immediately became the allies of the nations fighting Germany, and as such were bound to share our bread with them. These nations, having borne the burden of the battle for nearly three years, had reduced their agricultural

production to a low ebb, and the wastes of war had taken such a toll that they looked to America to supply the deficiency. America's position to do this was none too bright, for she had experienced a year of light crops, and, further, was called upon at a time when at least one-half of the country had already planted, and the other half, while willing in many instances, did not have the seed, fertilizer or capital to increase. However, the country as a whole rallied splendidly to the call, and food crops in great quantity were planted. In some sections of the south cotton was plowed under and corn planted. The Federal government had, among the many difficult questions to contend with, that of assisting those sections of the country which had been used to importing their food supply largely from other sections. The south and New England were particularly affected by this, as both grew little of what they consumed, and neither had the facilities for growing either cereals or food animals in sufficient quantities to meet their needs. So it was necessary in these particular cases, in so far as possible, to provide substitutes. The planting of corn, beans, peas and potatoes was urged, and the response all over the country has been generous, so that this year America has the distinction of having produced the largest crops, excepting wheat, in its history. Never has there been such a patriotic response on the part of the farmers of the country for increasing their crops. In the face of labor conditions and high prices of materials, they faced financial ruin in case crops did not turn out well or prices dropped; and in spite of general high prices many of them have produced at a loss, and are in no safe position to produce another year. Yet the expression "Conserve or serve" is as truly fitting in relation to the farmer as it is to every one else in the country. We are fighting this war to maintain the right to live our lives under no dictation by any foreign ruler, and sacrifices are as important in reaching this ideal as they were in the days of the Revolution. The country has got to increase its resources as it has never done before, and of these resources agriculture is second to none. The establishment of minimum prices for our crops is a questionable proceeding, for the minimum may as easily be too low as too high. No one can foresee the future well enough to tell what the crop will be

nor the cost of producing it. Costs based on past experience will not hold good for the future, as conditions are changing from day to day. Prices are usually affected not so much by overproduction, but rather by poor distribution and lack of proper methods of conservation. These two very important subjects are being carefully looked after for 1918, and should allay the fears of the farmer that a fair price will not be realized.

CROPS OF 1917.

Taken the country over, crops have varied more than usual. The familiar cry that crops have failed in certain sections has been true to a great degree. Certainly many sections of the country never have suffered from bad weather conditions as they have this year. The great grazing States have suffered so from drought that hundreds of thousands of cattle are perishing for lack of food. Late cold spring and early fall frost have reduced our largest corn crop to an appreciable degree. Severe winter weather and wet spring made inroads upon the wheat crop, none too large. Cotton in some States was badly affected by the boll weevil, but on the whole is a fair crop. Potatoes, with the exception of Maine, are well above the average, and the quality is reported good. Cereals, while averaging well, are difficult to move and late in reaching the market at this writing. Corn in the great southwest is still unhusked, and it will be some time before the new crop reaches the market.

Massachusetts is not one of the leading agricultural States, and the increase or decrease of agricultural production here cannot have a controlling or even a vital effect on the war. At the same time, it would be foolish to minimize the importance of increased production of food within the borders of our Commonwealth, because every pound of food produced here will replace one that would otherwise have to be brought to us over railroads already overburdened, and will release a pound that can be sent abroad to our army and our allies. For this reason it is a source of gratification not only that larger acreages than usual of farm crops were planted in Massachusetts in 1917, but that the season's crops turned out well, both in quantity and quality, with one or two notable exceptions.

Spring was even later than in 1916, and prospects for planting during May did not look encouraging.

The following table shows the rainfall for the first ten months of 1917. As will be seen, the rainfall of $4\frac{1}{2}$ inches in May and 4 inches in June was abnormally high, and in addition, May in 1917 was the coldest May recorded in this State for eighty years: —

		<i>Rainfall.</i>	
		Inches.	Inches.
January,	. . . . .	2.82	June, 4.05
February,	. . . . .	2.67	July, 1.10
March,	. . . . .	3.73	August, 7.06
April,	. . . . .	2.72	September, 1.91
May,	. . . . .	4.45	October, 5.33

Hay made a large crop, though not as large as in 1916; the surplus in New England, however, from the previous year, together with the continual slaughter of cattle due to high grain prices and scarcity of labor, combined to force the price of hay down, so that this has been the only important crop for which the price during 1917 has been appreciably lower than normal. In some sections of this State and other New England States loose hay at the barn has sold as low as \$10 per ton. As a result of the low price and the shortage of labor hundreds of acres of grass were not cut at all, and it is obvious that one of our principal needs here in Massachusetts is an increase in live stock to furnish an outlet for our surplus roughage.

The apple crop was very spotty in character, some sections of the State showing a larger yield than in 1916, and others very much smaller. On the whole, however, the crop averaged about 20 per cent less than in 1916. The quality of the crop was splendid, and a much larger quantity has been placed in storage than a year ago.

The cranberry crop was very badly injured by the frost of early September, which affected Cape Cod with unexpected severity. This frost not only cut down the yield fully 30 per cent, but the keeping qualities of a large percentage of the crop gathered was damaged so that it can hardly last a month.

Probably the *largest potato acreage in the history of Massachusetts* was planted in 1917, and up to the 1st of September conditions looked favorable for a crop of proportional size.

Two factors, however, united to cut down the yield from preliminary estimates, — first, the heavy frost which has been spoken of, and second, the fact that probably, due to lack of potash in the fertilizers, many fields with healthy, vigorous vines were found to contain comparatively small yield of tubers. Your secretary does not believe that heavy potato yields can be restored until a cheap and satisfactory source of potash is discovered to take the place of the importations which formerly came from Germany.

The tobacco crop is reported as about 10 per cent less than in 1916, but of good quality, and has moved from growers' hands at profitable prices.

The Massachusetts onion crop is very slightly larger than last year, although the yield per acre is reported as 10 bushels less than last year, the yield per acre being reported as 240 bushels as against 250 bushels for 1916.

The acreage of corn was very much increased over normal, but this crop again was injured by the September frost. The yield for the State, however, was estimated on October 1 as 2,366,000 bushels, as against 1,764,000 bushels for 1916.

An abnormally large cabbage acreage was set, the condition of the crop on October 1 being reported as 130 per cent, as against 76 per cent on the same date last year. The enormous increase in cabbage acreage may be traced directly to the scarcity and high prices in 1916; this year cabbage prices so far have not been satisfactory to the grower.

Among other market-garden crops, cauliflower has in many instances been almost a total failure. The plants have grown splendidly, but have refused to head up, and the exact reason for this condition has not yet been discovered. In the early part of the summer there was a large overproduction of spinach, and many fields of this crop were plowed up.

CORN.

The increased acreage planted to corn this year was a most encouraging sign, and we have no doubt had a large increase in the crop over former years, but the early frosts in most sections injured the quality of the crop, and leads me to write more fully upon this question so vital to Massachusetts and New England.

Practically every question raised by the war points definitely, in one way or another, to the dependence of one continent upon another, of one country upon another, of one State upon another; and while we can never expect to get entirely rid of this dependency, we should get rid of it in so far as it affects things common to the sections affected. In the readjustment of things after this war this important question will be considered, as every waste and useless expenditure will be prevented in so far as possible. To this end the tax imposed by transporting produce or merchandise from one section where it is produced to other sections where it might be produced should be cut down in so far as economic conditions warrant. New England has probably been able in the past to buy her corn as cheaply as she could raise it, even paying the transportation charges. It is questionable whether or not she can do so in the future unless cheaper freight rates are made. One of the principal factors in the production of corn in Massachusetts has been the uncertainty of ripening the crop.

There can be little doubt that if our farmers can produce corn as cheaply as they can buy it they would certainly grow it themselves. We need early maturing varieties now more than ever, and, so far as I can find, not one of the six New England experiment stations is doing a bit of work toward producing an early ripening corn. Results which have been secured so far are largely from some interested persons who have made a hobby of corn breeding. The farmers of Massachusetts and New England should demand at once that breeding work in corn be taken up by the experiment stations, and this work continued until we have plenty of satisfactory varieties which are practically sure of ripening. At the coming corn show of the Board in Worcester a prize is offered for a ninety-day maturing strain. It is hoped that this may bring out something new.

GRAIN GROWING IN MASSACHUSETTS.

Our State in its early history produced practically all of its grain, but later could not compete with the great grain-growing States. It would seem that now, in order to supply a larger per cent of our food, grain growing should be revived in certain areas. The lack of adequate tools and machinery, and of mills

to grind the product, will undoubtedly do much to prevent production on a large scale, but grains of many kinds should be produced for at least animal feed. Barley offers one of the easiest of our grains to produce, and at the same time can be used in many ways, particularly as a hog-fattening food. Buckwheat, oats and rye can easily be grown, while spring wheat can be grown in many places. Crops of over 40 bushels of wheat to the acre have been reported this season. The co-operative ownership and use of machinery will do much to further the growing of grain.

SUGAR BEETS.

The scarcity of sugar has again raised the question of beet sugar production in this State, and many persons are urging the revival of this industry in this section. The present outlook for labor, and the lack of factories for utilizing the raw products, seems not to warrant our farmers engaging in this industry at the present time, although long continuation of the war may make the growing of this crop profitable again.

SUN FLOWERS.

Your secretary has several times been asked about the feeding value of the sunflower as compared with silage corn for dairy cattle, and has only lately been able to secure definite answers to this question. In certain sections of the west, where corn was a doubtful crop, sunflowers have been planted and found to yield a great deal more bulk per acre than corn, with a correspondingly high food value when used as a silage crop. Plantings in Massachusetts show about twice the weight of corn on poor land, and from one-quarter to one-third more on good land. Sunflowers may be planted separately, with silage corn or with sweet corn, and should be cut when the stalk is green and the flowers about 5 inches in diameter. They are cut readily by machinery, and are best when mixed with corn, clover or alfalfa in the silo. Experiments in the feeding value show that cows eat them as readily as corn, and that they produce as heavy milk flow. The cultivation of this plant is much simpler than corn, and seems at this time to offer at least an addition to the dairy ration.

CULTIVATION OF HERBS.

War conditions have not only created disturbing effects on the large and important crops of the world, but also on many of minor importance, yet essential. Among these are the herbs which are used in modern cookery and chemistry, and which were produced largely in Central Europe prior to the war. Shortage in many of these did not appear until 1916, owing largely to stocks on hand, but at this time many of these are in such a small supply that prices have risen abnormally. It would seem that there was a chance for some of our farmers, particularly those having fairly light land, to go into the production of some of these plants, for once the business can be established here it will be hard to drive it out after the war. The following are some of the plants we might grow: sage, belladonna, catnip, digitalis, stramonium, or thorn apple.

THE DRAFT AND FARM LABOR.

No definite realization of war was experienced by our farmers until just before the operations of the selective draft. At this time many of those of draft age, realizing the possibility of being called to the colors, volunteered. The lack of regulations relative to farmers and their employees left the matter of choice entirely in the hands of the district boards, who have striven hard in a most difficult situation to deal justly with every one. Persons owning farms or who are essential to farm operations have, in most cases, been exempted. There are, of course, cases on the border line where mistakes have been made.

At this time the new draft regulations are in effect whereby the farmers are placed in four classes, as follows: —

Class I. — Unskilled farm labor.

Class II. — Necessary skilled farm labor in necessary agricultural occupations.

Class III. — Necessary assistant or associate or hired manager of necessary agricultural enterprise.

Class IV. — Necessary sole managing, controlling or directing head of necessary agricultural enterprise.

It would seem that the effect of these new regulations would be to restrict agricultural work even more than during the past year, in that it takes the laborers first, leaving the highly skilled managers or owners without assistants. But in this relation the farmers must realize that we have a very serious war upon our hands, and not only must we produce more food, but we must do it with an entirely different type of assistance than we have ever used before. Canada has undergone the most severe reduction in her agricultural laborers, yet has adapted herself to the changing conditions to such an extent that not only has she kept up to her normal production, but has increased it to a large degree, and this by the work of men above military age, women, boys and girls. England had, on the other hand, after two years of war, practically permanently exempted agricultural labor and managers, but her position is not analogous to ours.

Your secretary has had the honor to serve on one of the draft boards, and while he realizes more clearly than ever the necessity of raising an army, and of all doing their utmost to bring this about, he feels that the large reduction of agricultural labor has not been entirely due to the war, but rather to the fact that this labor has been attracted to other industries which are willing to pay more than the farmer can afford. We have probably got to face at least three more drafts with a possible change in the ages both upward and downward. It therefore behooves us to make such adjustments as we can in our work, confining our efforts largely to the production of such crops as require less labor, and, by the use of all labor-saving devices, reduce to a minimum all human effort.

The campaign last season to place boys on farms, which originated late in the season, was one of the most promising sources of labor yet devised. Over 1,500 boys were placed on farms from camp centers, which were under the supervision of men trained to handle boys. While at first farmers were decidedly adverse to the scheme, the success of the experiment was assured by the increased demand for this labor all over the State, some farmers stating that if it were not for the boys they could not have conducted their farms. Your secretary had a

number of these boys on his farm, and believes that there is a great future in this kind of help, provided it has the proper supervision and the farmers are sympathetic.

It is the hope of the State Committee on Mobilization of School-Boy Labor to place very large numbers of boys from our schools upon the farms this year under similar arrangements as last year, and in anticipation of the demand the work is being now organized upon an extensive scale. The United States Department of Agriculture is planning to place a labor agent in our State this year whose work will largely be in listing and placing all possible labor on farms. In this work towns and cities should assist by appointing agents to list all labor, even though such persons may not be able to work all the time. The use of women on our farms should be encouraged, for in much of the work they can certainly take the place of men. If many non-essential industries were given up during the summer season this would release large numbers of both men and women who could undoubtedly assist greatly in our agricultural production.

Another source of labor which should receive attention, particularly from the national government, is that of the Chinese coolie. Already over 10,000 of these laborers have been sent to France on a labor contract. There is an unlimited supply of these men in China who could be imported under a contract system for the duration of the war, and good results obtained.

Some of the things of which I have spoken are decidedly radical, but war imposes conditions upon us of which in times of peace we think but little. Our big job now is to win the war. War demands large quantities of food. Food production demands, above all, labor. Are we going to sacrifice the winning of the war to conservative notions about labor? If we do we are more than likely to prolong the war to such an extent that it will result in a draw, and our children will have this all to do over again.

FERTILIZERS.

That the prices of fertilizers for the coming spring are to be advanced about 50 per cent there is no doubt. Whether such a *large* increase is justified is a question which could be determined only by very careful study of all the circumstances in

the case, and by one possessing very considerable knowledge of the fertilizer business itself. It is apparently a fact, however, that many of the most important fertilizer ingredients are scarce and high in price, while at the same time freight rates have advanced and transportation facilities are far from satisfactory.

The reasons for the increase in price of the mixed goods are stated by a representative of one of the large fertilizer companies, in part, as follows:—

The supply of all kinds of organic ammoniates is unusually short, and there is great difficulty in securing transportation by vessel or by rail of crude fertilizer stock. Equal, or greater, difficulty is also being experienced in securing the necessary supply of sulphur—for the manufacture of sulphuric acid—in pyrite and in the form of native sulphur. Most of the supply of pyrite has heretofore come from Spain, but with the shortage of shipping, and the taking over of vessels to meet the needs of the army and navy departments, the cost and difficulties of transportation have greatly increased.

Reports in hand show that bone meal, tankage and dried blood are very scarce and very high in price.

Sodium nitrate is said to have advanced in cost about 100 per cent, owing to the demand for it by munition makers and the high transportation rates from Chile to the United States.

The supply of domestic potash has considerably increased, but some part of this increase may be offset by the demand of certain industries for potash for manufacturing purposes, and even by the government for use in manufacturing explosives.

The causes of this deplorable fertilizer situation will not so much interest farmers as the simple fact of the great advance in the price of the finished product,—a condition confronting them which is hard to meet; and it is a most unfortunate one, too, for the entire country, since it is calculated to discourage rather than encourage efforts for a larger food production. It is a very serious matter for the farmer that fertilizers of practically the same grade as those which last spring were sold at \$29 and \$30 per ton are to be offered in the near future at \$44 and \$45. Indeed, it may require exceedingly close figuring to discover a probable living profit from their use.

With these conditions facing us, it is even more apparent that farmers have got to use all the substitutes for fertilizers which they can devise. A careful saving of all animal manures, with leaves and other refuse composted with the same, and turned over often enough to prevent fire-fanging, will help; while those farmers near the seacoast should make use of all seaweeds and fish which they can obtain. Soiling crops must be resorted to more than ever, and a greater use of muck or peat should be made. Indeed, this latter suggestion is one which should be taken more seriously than ever before. Peat dug this winter and treated with lime at the rate of 200 pounds of lime per ton of peat will make a fair addition of humus and slight percentages of potash and nitrogen to our soils at a very low cost. The enormous quantities of peat in the State should be utilized to the greatest possible extent.

At this time attention is seriously called to the use of sewage and mill waste for fertilizers, and the great difficulty which has always been experienced in the application of this waste product, and also of the bad effect of the grease contained therein. The attention of our scientists should be directed toward eliminating these difficulties. We now know that tons upon tons of potash and nitrogen daily pass through our sewers which, if their recovery could be made of practical value, would be one of the best sources of fertilizer.

Another phase of the fertilizer question should not be lost sight of at this time. Excessive demand for a commodity unless the price is regulated by the government, always tends to raise the price. The demand for fertilizers in 1917 so depleted the stock that in anticipation of an equal demand in 1918 prices must of necessity be affected.

Much of the fertilizer used in 1917 by amateur gardeners was wasted. To allow this condition to occur in 1918 would be a calamity. It would, therefore, be advisable for the national government to see that the farmers are first supplied with fertilizer, and in order to accomplish this result no fertilizer should be sold to other than farmers until after April 1.

Certain fertilizer manufacturers aver that fertilizer prices are not as high in comparison as the prices of farm products. In other words, as one fertilizer firm puts it, "Prices are con-

siderably higher than last year, but in proportion to the increased prices of crops, fertilizer is cheaper than ever before." The inference from this and other similar statements is that they are offered as an *excuse* for the large advance in prices of fertilizer, and to forestall objection to the increase by the farmer. They practically declare that the farmer's bank account is larger than formerly, and warrants an additional draft upon it.

THE SEED SITUATION.

Reports recently received by the Board from many seedsmen in Massachusetts and other parts of the country, concerning the seed prospects for 1918, indicate that a very serious and unfortunate condition confronts the farmers and gardeners as well as the seedsmen themselves. The opinion, as expressed by a large majority of our correspondents, prevails that the supply, both of field and garden seeds, will be unusually limited, and that prices will be considerably advanced.

The war alone is not the cause of this situation. Unfavorable weather conditions for the development and ripening of seed stock which existed throughout the entire country during the early fall were factors responsible for the great shrinkage indicated in these crops. Very poor weather conditions for the maturing seeds were also experienced in Holland and Denmark. There is reason to believe that the same causes which have brought about a shortage have also impaired the quality of the seeds in respect to their germinative power.

There has been some increase in the production of seeds in this country since the commencement of the war, but the increase is more than offset by the decrease in the quantity of seeds which are being imported from abroad. It is doubtful whether the contracts which have been placed in foreign lands for seeds will be filled to any great extent, not only because of the poor crop conditions there, but also owing to the embargo on exports in force in those countries.

The kinds of farm and garden seeds of which there seems to be a particularly limited supply are as follows: some kinds of field corn, all clovers, ruta бага, turnip, sweet corn, cabbage, cauliflower, beet, bean (except, perhaps, pole Limas), carrot, spinach, radish, pepper and tomato.

The crop of seed sweet corn was very seriously injured by early frosts, and it is estimated that not more than from 10 to 25 per cent of this stock is capable of germination.

The prospect of an adequate supply of seed peas is also poor.

The estimates as to the probable price of seed potatoes range from \$2 to \$3 per bushel and from \$6 to \$10 per barrel.

Through the efforts last spring of the United States government and State officials, and the public safety committees, many persons who had had no experience in gardening were induced to engage in this work, and unfortunately much valuable seed was wasted in numerous instances through improper handling. That there may be no repetition of such disastrous results those who contemplate the planting of home gardens the coming spring are urged to study the subject of plant cultivation from information which may be obtained from this Board or from the public safety committees, and by reference to the standard works on agriculture and horticulture in the public libraries. No seed should be permitted to go to waste in a time like this through ignorance of the planter.

The present situation, while due to unlooked-for conditions, as the war and the weather, only serves to remind us more acutely than ever of the necessity of producing more seed in our own country, and of studying conditions so that favorable localities may be selected for the production of seeds of the highest quality. Undoubtedly, in certain parts of this State seed growing can be conducted at a profit. We now have some market gardeners producing certain root crop seeds of very high grade, and which are eagerly sought by those who value quality. Beets, carrots and onions may and are produced satisfactorily. In a country as large as ours, and with such varied conditions, there should be plans for the production of all varieties, particularly after this war, when we shall undoubtedly be placed on a more equal basis with Europe as regards labor. Our agricultural colleges and experiment stations should give more thought to the subject of teaching and experimenting in seed culture. It is interesting to note at this time the effort being made at the Essex County Agricultural School, which has this year established a seed farm near the school. During the

coming season all of our farmers should do their utmost to grow and save their own seed, and by careful selection strive to improve upon the strains we now have.

FOOD CONSERVATION.

It has been extremely difficult for the people of this country to adjust themselves to a restricted diet, or rather a change in diet as required by war conditions. The campaign begun in the spring to conserve food found a willing response, particularly in relation to home canning and preserving, but a lack of materials and containers prevented a larger output. In this conservation campaign particular attention has been paid to using less meat, wheat and sugar, and many substitutes have been offered which seem likely to have a direct effect in stimulating other agricultural activities; as, for example, the scarcity of sugar has brought greater attention to bee culture, while the lack of wheat flour is stimulating the production and use of other grains. Home canning, preserving, pickling and drying of all sorts of fruit and vegetables have been conducted on a larger scale than ever before, and the organization of canning clubs and kitchens has resulted in the saving of large quantities of food. The lack of containers has developed various drying outfits, and these have done much in saving foods. The increase in commercial canning plants has been slow, and practically only those near or in a few of our cities seem to enjoy any degree of prosperity. The extension of canning plants to the country seems to be restricted largely by the lack of sufficient crops in any one locality, or to the very short season of a particular crop. While the general canning plant is an expensive and permanent structure, it is well to call your attention at this time to the less expensive drying plant, which could be made portable, thus serving large sections for a long season. The drying of many of our fruits and vegetables is becoming more and more popular, and offers a very important addition to the conservation program. Food conservation should last not only during the war, but should be one of the means of paying the expenses of the war when it is over, and should also apply to cattle and poultry feeds as well as to human food. The farmer's part in the food conservation pro-

gram is, perhaps, as important as any, for the waste of food on our farms is proverbial, and should be stopped. Practically every farm can support a number of hogs on the crops which would otherwise go to waste, and as this is one of the animals which will do much toward correcting our meat shortage, more hogs should be kept. Possibly in some sections, where there is plenty of pasture, beef cattle could be kept instead of hogs. Each and every method to conserve food should be practiced. The revival of many of the old-time methods in New England, as the grist mill, the pork barrel and the smoke house, would do much toward making ourselves independent of the rest of the country.

THE SHEEP QUESTION AND THE DOG LAW COMMISSION.

The introduction of no less than 14 bills in the last Legislature relating to sheep and the dog nuisance led to the appointment of a commission to revise the dog laws of the State. This commission consists of Judge Sanborn G. Tenney, A. E. Seagrave, assistant Attorney-General, W. C. Adams, chairman of the Fish and Game Commission, and Wilfrid Wheeler, and was organized by electing A. E. Seagrave chairman and Wilfrid Wheeler secretary. This commission has held a number of meetings, and has drawn the first draft of a new law. Already one hearing upon the proposed draft has been held at Greenfield, and two more are planned before the Legislature assembles.

In drafting this law the commission has endeavored to first, restrain the dog, and second, enforce the law through the State rather than by counties and towns. Opposition seems already to have developed to changing the enforcement from county to State, but the whole question must be looked at from a State-wide standpoint. We know at this time that the present dog laws are not enforced nor are dogs restrained. We know that there is a decided demand to increase sheep in the State. We also know that the dog is a retarding factor in the sheep industry. Therefore, knowing all this, the people of the State have got to decide between the sheep and the dog; that is, whether we will produce wool, mutton and hides, or allow this important industry to lapse.

With the great impetus given to the sheep breeding in the increased prices of mutton and wool, there is a country-wide movement to restock certain areas with sheep. There has recently been formed the More Sheep, More Wool Association, backed by many influential men of national reputation, who are doing their utmost to supply breeding stock to the northeastern States. Acting with the head of this organization your secretary was able to bring one full car of sheep into the State this year, and to distribute from New York quite a number, which together with others have added over 2,500 sheep to the State this year. It is gratifying to note this increased interest, but it should be borne in mind that the redistribution of sheep, unless they go to persons who know how to care for them, is likely to cause more harm than good.

In order to further the sheep industry in this section the United States Department of Agriculture called a meeting of representatives of all the New England States and New York at Boston early in November, at which over sixty delegates were present, and after a thorough discussion the following resolutions were adopted, and a permanent committee, of which your secretary is chairman, was appointed to carry into effect the recommendations: —

RESOLUTIONS.

1. That special efforts be made to establish the confidence of the farmers in sheep husbandry.

2. That we solicit the co-operation and action of the United States Department of Agriculture, the State colleges and the extension service, and the State Departments of Agriculture for a constructive program of educational work.

3. That community organizations of producers be formed to assist in the marketing of lambs and wool, and to obtain a higher standard of breeding; and we recommend that such community associations of producers establish in sections of New England and New York central exchanges for the better marketing of lambs and wool and breeding stock.

4. That we urge the desirability of uniform dog laws for New England and New York, all such laws especially to provide that dogs be restricted to the premises of the owner at all times between the hours of 6 P.M. and 7 A.M.

5. That the several States be urged to provide the funds and facilities for the importation and distribution of breeding stock.

6. That boys' and girls' sheep and lamb clubs be generally established.

7. That banks and business organizations be urged to give liberal financial assistance to such clubs and to such farmers as need and are worthy of such assistance.

8. That a committee be appointed, consisting of two representatives from each New England and New York State, to make a survey of conditions of the industry, to report on same and also to consider means to obtain uniform dog laws.

It would seem, with all interests united on a conservation policy for restocking our pastures with sheep, that there would be a fair chance of success. I recommend that the Board support the law as drawn by the Dog Commission.

THE JOINT DRAINAGE BOARD.

The creation by the last Legislature, under chapter 212, General Acts of 1917, of the Joint Board of Health and Agriculture to investigate the problem of drainage in the State gives a slight impetus to this very important problem, the size of which is not recognized as yet to any sufficient degree; and the appropriation of only \$2,000 for the work gave the Board but little with which to accomplish results.

The Board was organized by the appointment on the part of this Board of its drainage committee, and on the part of the Health Commissioner of Messrs. Allan J. McLaughlin, M.D., John T. Wheelwright and George C. Whipple. Mr. Henry M. Howard was elected chairman, Wilfrid Wheeler, secretary, and X. H. Goodnough, engineer.

The Board has had but one meeting, as a whole, and one hearing. But the chairman, secretary and engineer have been in close touch with several problems, and have done much investigational work.

The Board was fortunate in securing from the United States Department of Agriculture the services for three months of Dr. A. P. Dachnowski on a co-operative basis of payment. This has resulted in a very close study of the various types of soil in our very varied soil problems connected with this work, and it is expected that Dr. Dachnowski's report will serve as a basis in directing our work for the future in such sections as

may be best adapted to agricultural development. Particular attention has been given in Dr. Dachnowski's work to those large areas which involve from 1,000 to 10,000 acres. Surveys are now being conducted in one of the cranberry sections with a view to relieving adverse conditions, and it is the hope of the Board to continue this work year by year. At this time it is safe to say that we have only made a slight beginning on the question of soils connected with this work, while we have not attempted to go into the engineering problems.

It would be most advisable to have a large enough appropriation to continue Dr. Dachnowski's work, and with that the necessary surveys so that when the State is ready to take up the actual work all the data will be ready.

The Board was also asked to amend the present drainage laws, and a subcommittee is at work on these, which will undoubtedly have a draft of a bill ready for presentation to the Legislature.

One fact stands out prominently in the investigation so far, and that is the enormous amount of peat in our meadows of eastern Massachusetts. And while this material varies in considerable degree, it offers at once a problem in the study of which the State would now do well to embark, not only for its fuel value, which is potentially enormous, but for the other possibilities contained therein. Indeed, the problems raised by this investigation are such as to warrant a permanent study of all our wet lands, for as yet little is understood in relation to them. Your secretary would recommend that the Board support a further appropriation for this work and also a change in the mill acts so as to permit farmers to install irrigation systems.

RURAL CREDITS.

Your secretary is pleased to report at this time quite a different attitude on the part of banks and other loan agencies toward the use of their money in agriculture. The example set by certain banks in the State has been followed by others, and in some cases by groups of persons interested, while the advent of the Federal Land Bank, which has been established with headquarters at Springfield, brings this very important subject even closer to our attention.

With the general interest in agriculture all over the country various new systems of financing the farmer are coming to the fore, and some of them offer easy and simple methods of borrowing. While some are legitimate business propositions others are purely philanthropic, and as such should be condemned. No bank or organization should be asked or even volunteer to loan money at no profit. If agriculture cannot be made to pay as a business it certainly should not be bolstered up by leaning on other business. We believe that there is a legitimate field for profit in a simple system of credits to farmers, but paternalism and philanthropy should not enter into transactions relating to the loaning of money to farmers. Capital is more than ever needed to develop agriculture in our State, and there is plenty of room for the expansion of capital in this direction through many channels not previously used.

It may be of interest to our farmers to know that potatoes have been added to the list of farm crops upon which money may be borrowed upon presentation of storage-house certificates. The notes given the local bank are rediscounted through the Federal Reserve Banks, thus placing potatoes with wheat, corn and oats as a borrowing agency.

As an illustration to show that notes given by farmers are paid promptly, in New York this year a group of men organized to loan money to farmers in order to encourage greater production of cereals, swine and sheep. A large amount of money was loaned on short-term notes, and it is now reported that 85 per cent of these notes were paid upon maturity, 11 per cent were renewed, until crops were harvested, while only 4 per cent were questionable.

THE MARKET QUESTION.

The law passed in 1915 requiring cities and towns of over 10,000 inhabitants to set aside public places for market sites, and which was complied with by over 50 cities and towns, has been little used until this year. Under the stress of distributing the large crops, particularly of garden vegetables, and in the desire on the part of the public to deal first hand with the farmer, a general wish to make use of these places has come about. Added to the places set aside and approved by the

Board in accordance with the law, public safety committees in various towns have established market places to a large extent, and it is safe to say at this time that practically every city and more than one-third of the towns have tried out the experiment of conducting an open-air market. There have been some failures, but in most cases these markets have been unusually successful, both from the farmers' and the public's standpoint.

The market gardeners, in conjunction with the United States Department of Markets and the Public Safety Committee, have this year established a daily market report for which they are paying part of the expense. This report appears in most of the Boston papers each day, and is based on wholesale and retail figures secured at the various markets in the city.

The Board has tried during the past two years to secure legislation establishing a bureau of markets as one step in a better system of marketing, and while this measure has failed, the present condition of affairs serves to more forcibly demand the establishment of such a bureau. It is of interest to note that in 1917, 12 States established market bureaus, and that now 28 States have such departments.

There is an increasing demand from cities and towns in the State for the marketing assistance which can best be given by a State bureau. This past year, at the request of the city of Leominster, the Board made a survey of the market demand and the locally grown supply of farm produce for that city. Interesting and important facts were brought out; for example, that the vicinity of Leominster produces more than enough apples and milk for its population, but is an importer of potatoes and butter in large quantities. Facts such as these could and should be secured for the entire State.

The rapid increase in the work of the United States Department of Markets makes it imperative that the States do all they can to assist in this very important work. I therefore recommend the introduction of the market bill this year.

THE AGRICULTURAL COLLEGE AND OTHER EDUCATIONAL INSTITUTIONS.

Up to the opening of the war the college had enjoyed a particularly prosperous year, with a full enrollment of students, the use of new buildings and an adequate teaching staff. At the outbreak of hostilities, however, the student body was so reduced and the teaching staff so broken up that but little work was attempted during the spring months, and the reopening in the fall was delayed over four weeks. The activities of the institution have not ceased, as many of the staff and students have been engaged in public work and in various lines of agriculture, while many of them have joined various branches of the army and are now rendering splendid service to their country.

The extension service has had a most active year, and the demands upon their force, due largely to the increase in war gardens, have been almost impossible to meet.

There has been added to the college for a forestry demonstration and experiment station a large tract of land on Mount Toby, which is certainly one of the beauty spots of the State and well worthy of development. This tract of land offers a splendid opportunity for study and experimentation in forestry, and the college is indeed fortunate in being able to secure it.

Since our last report on the relationship between the Board and the college little has been accomplished, for while a working arrangement was agreed upon, the practice of this agreement has not been carried out. The whole question has, however, been placed before the committee to investigate the Agricultural College, and we may hope for some settlement of the matter from them. It is interesting in this connection to note that this same question is a live one in nearly all of the States, to such a degree that practically the same working plan as was suggested in Massachusetts was adopted by the Association of Agricultural Colleges and Experiment Stations at Washington, November 15, 1917, after a meeting of the executive committee of the Association of Commissioners and Secretaries of Agriculture with the executive committee of the Association of Agricultural Colleges and Experiment Stations.

The present relations regarding the agreement between the Board and the college stand practically as they did at the close of our business meeting last year; indeed, the extra work occasioned by the war has temporarily laid aside many questions which should be settled.

Agricultural education is more than ever coming forward, not alone through the college, but by means of courses in high schools and the establishment of county schools in agriculture. Massachusetts now has over 12 high schools offering such courses and 3 county schools, all of which are accomplishing good results. Especially I wish to call to your attention the Essex County Agricultural School in which our late lamented member, Frederick A. Russell, was deeply interested. This school has enjoyed, under the efficient management of Director F. A. Smith, an unparalleled success, with an enrollment of 185. Its work has the support of the people of the county. This type of school is doing much toward directing the young people of the county into agricultural work at an early age, and is giving them the practical training necessary for them to make a success in this industry.

THE COMMITTEE ON PUBLIC SAFETY. SUBCOMMITTEE ON FOOD PRODUCTION AND CONSERVATION.

Soon after the outbreak of war the Governor appointed a committee of 100, known as the Committee on Public Safety, and this committee appointed a subcommittee on food production and conservation. Similar bodies were organized in practically all of the towns of the State.

This subcommittee was composed of C. D. Richardson, West Brookfield; N. I. Bowditch, Framingham; Joshua L. Brooks, Springfield; Marcus L. Urann, South Hanson; Reginald W. Bird, Boston; Philip Allen, East Walpole; Henry Sterling, Belmont; John D. Willard, Boston; Kenyon L. Butterfield, Amherst; and your secretary, and immediately took up the task of increasing production as well as conserving food. Many agencies were called upon and responded loyally.

The program of the committee embraced the subjects of farm production, boys' and girls' gardens, family gardens for adults,

home conservation of foods and economic distribution of food and supplies. Subcommittees were appointed to go into various questions related to the program, such as labor, seeds, fertilizers, women's work, crops and animals. Thousands of pamphlets and fliers were printed on many subjects related to gardening and conservation.

The work of this committee has done much to stimulate amateur gardening, and through its organizations in practically every town did much to encourage planting by the distribution of seeds, tools and fertilizers at cost.

So far as the farmer is concerned the work of this committee is questionable, for while food was no doubt increased in fair amounts, the increased use of seeds, fertilizers and tools, as well as the restriction of labor caused by the amateur garden propaganda, placed the farmer in competition with an element not known before. Particularly was this difficult to adjust in this State, where many of our farmers are producing largely the crops which amateur gardeners would produce. It will be difficult to ever get at the cost to the State of this experiment in amateur gardening, as many who put money into gardens and garden work will be unwilling to tell of their losses; but in one instance known to the writer over \$15,000 was expended, and the returns in crops at market prices would hardly total \$5,000. Such instances can be multiplied in large and small amounts all over the State. It would seem that if there are people who are willing to assist in the problem of food production their efforts might be directed in more profitable channels, and instead of trying to grow the crops themselves they might finance the farmers sufficiently so that the crops may be grown by experienced people.

We are far too apt to consider that agriculture is any one's business, and that if a person cannot do anything else he can run a farm. The sooner the public gets this idea out of its head just so much sooner will we have a firmer foundation to build agriculture upon.

Not all of the work of this committee was directed in this direction, however, for farmers were urged to plant grain, roots, potatoes and to increase the meat animals in so far as

possible. Attempts were made by the committee to guarantee satisfactory prices for some of the crops grown, but these efforts have not been entirely successful. The main efforts of this committee were confined to the production end for upon the appointment of the Food Administrator, about the middle of July, the activities of the committee ceased, and its work was largely taken over by committees appointed by the Food Administrator. This committee has now been asked to act in an advisory capacity to the Food Administrator.

MASSACHUSETTS BUILDING AT THE EASTERN STATES AGRICULTURAL AND INDUSTRIAL EXPOSITION.

The Legislature of 1917 appropriated \$50,000 to construct an agricultural building on the grounds of the Eastern States Agricultural and Industrial Exposition, and made provision for a building commission. This commission was appointed by the Governor late in the summer, and consisted of John K. M. L. Farquhar, Edward P. Butts and Wilfrid Wheeler. J. H. Ritchie was employed as architect, and plans for the building are now complete and bids for construction offered.

The building is to be modeled somewhat after the old State House in Boston, except that two wings are added. It is hoped that this building will prove of great value in displaying the agriculture of the State to visitors at this exhibition.

The second exhibition of the Eastern States Agricultural and Industrial Exposition was one of far-reaching character, for in contrast with the first, which was restricted to the dairy show, this one embraced all branches of agriculture, and there have never been brought together in this section such splendid exhibits in many classes, particularly sheep, swine, cattle and horses. The occasion also brought together many organizations of national importance. The objects of this exposition, which are mainly to reawaken interest in the agriculture of this section and cement the northeastern States into one large body whose interests shall be mutual, are not alone confined to the exhibition of products, but their work embraces such practical subjects as marketing, advertising, credits, banking and the ex-

tension of new subjects in agriculture to this entire section. To accomplish some of these results a large force of trained men and women have been engaged and are now in the field, and the Board wishes them success in their work.

THE MILK SITUATION.

References to the milk question over sixty years ago show us that we are not any better off to-day than the people of that time were, for while prices of cattle feed and milk have risen, the proportion of costs to prices received remains very nearly the same, and, so far as figures can show, farmers were losing money on strictly dairy operations then as now.

The past year has been marked with an increased agitation on this vexed question, not alone in our State, but it has become a nation-wide question to such an extent that as a war measure the National Food Administrator is now seeking to appoint sectional committees which shall have some authority in settling prices so that there may be a fair supply of milk.

The increasing price of grain, labor and cows, and the high prices realized for cattle at the slaughterhouses, have reduced the dairy herds of the country to an alarming degree, and still further promise to reduce them unless some check can be applied; and it would seem that the only check possible would be that of securing an adequate price to the producer.

The milk business more than any other form of agriculture seems to invite the theory that low prices to consumers must be made, no matter what the cost of production is.

The year has been marked with great activity on the part of the New England Milk Producers' Association, which has called strikes of producers in certain sections which have been instrumental in forcing the wholesale price to 8 cents in the Boston market, and slightly more than this in some other cities of the State. The abolition of the leased-car system does not seem to have in any perceptible degree lessened the agitation of this question, although it may have made possible a more free movement of milk.

A New England-wide survey on the cost of milk produced was made during the past summer by the agricultural com-

mittee of the Boston Chamber of Commerce in connection with the public safety committees and the agricultural colleges of the New England States. This survey covered 850 farms in these States, representing 15,000 cows, or over 40,000,000 quarts of milk yearly. No claim is made that these figures are absolutely correct. They are taken, in so far as possible, based on cows averaging 5,000 pounds of milk. The following table gives the summary of the survey:—

Average Cost of producing a Quart of Milk by States (Cents).

[Figures represent costs at the country railroad station.]

	BOSTON CHAMBER OF COMMERCE SURVEY.			UNITED STATES DEPARTMENT OF AGRICULTURE SURVEY.		
	1916 to May, 1917.	Summer, 1917.	September, 1917. ¹	Standard Method of Making Survey, September, 1917. ²	Average Production per Cow in this Survey (Pounds).	Average Production per Cow, Census of 1910 (Pounds).
Maine, . . . . .	.0562	.0610	.0630	.0696	5,749	3,823
New Hampshire, . . .	.0403	.0524	.0525	.0595	5,923	3,758
Vermont, . . . . .	.0490	.0547	.0562	.0619	5,337	3,982
Massachusetts, . . . .	.0647	.0715	.0746	.0812	5,005	4,525
Connecticut, . . . . .	.0553	.0653	.0671	.0718	6,009	4,188
Average, . . . . .	.0531	.0610	.0627	.0688	5,605	4,055
Number of farms,						850
Number of cows,						15,000
Number of quarts of milk,						40,325,587

The above are figured on the basis of year-round costs, which includes summer pasture. The cost of producing milk from cattle not on pasture is, therefore, increased.

Certainly the Chamber of Commerce should be thanked for their splendid work in getting these results together, for there can be no basis of an adjustment of this question unless something fairly definite is known about costs. The attempt to lower the price of milk to the consumer in Boston by establishing a lower price at certain stores than the wagon delivery

¹ Based on grain at \$56 per ton, no increased labor charge figures in.

² The principal difference between the United States Department of Agriculture standard method of making the survey and the Chamber of Commerce survey is that the former has added 10 per cent to the net cost per cow per year for managerial ability, business risk and miscellaneous overhead charges.

seems to have developed into a contest between one or two large dealers who controlled the stores, on the one hand, and the smaller dealers who made house to house deliveries, on the other. Under this system the milk at the stores was sold below recognized costs, and does not seem to have in any great degree settled even this one question.

Comparatively few of our farmers are doing a Boston business. Those who have stayed in the milk business have done so largely on account of local conditions, which seemed to offer a better market than Boston, where competition was keen with the other States. Those of our farmers who seem to be making a living at dairying are those who have special markets and are generally running other things with their dairy business. I do not wish to be understood as saying that dairying cannot be made profitable in this State, but the present indications are that unless the public are willing to pay more for milk there will be considerably less of it than usual, and the price will automatically rise.

Another phase of the dairy business which should be referred to at this time is in reference to the production of stock for the future. The depletion of dairy animals all over the world calls for decided action on the part of this country to make good the loss. We know that Europe has lost enormously all kinds of live stock, and will look to America to restock her farms at the close of the war. America should seize the opportunities to render to the world a service for which she is peculiarly fitted. Pure-bred animals should be raised in larger numbers, for it is this stock alone which would interest the buyers of the older countries. The financing of such propositions will no doubt be difficult, but if each one of our dairymen could raise a few such dairy animals the aggregate would be enormous. The dairyman must supplement his milk business with that of better-grade or pure-bred stock, for it does not seem possible to conduct the milk business profitably alone.

POULTRY.

In many respects the poultryman has followed the dairyman, and has reduced his operations to the lowest possible ebb. But we have reached the danger point much more quickly in the

poultry line than in the dairy business, and undoubtedly we can recover more quickly.

The early spring tendency of our poultrymen was to curtail as far as possible in hatching, but upon being urged to increase the stock of birds, many incubator plants, which had suspended operations temporarily, went back to hatching, and about the usual number of chickens were brought out.

Feed prices did not materially change, however, and flock after flock has been entirely disposed of, while others have been greatly reduced. There are very few flocks in the State now numbering 1,000 birds. On the other hand, dressed poultry in enormous quantities is in cold storage, and is to-day one of the cheapest forms of food.

Whether or not this policy of entirely retiring from the poultry business is a wise one is very difficult to say. Here, again, the question of costs and profit enters very largely, and it is impossible for us to advocate that this business be conducted at a loss. The outlook for fresh eggs this winter is not promising, and even the increased prices are not stimulating production greatly. It is doubtful if eggs at \$1 per dozen would much more than pay costs of production this year.

The outlook for hatching eggs this coming spring points to a great shortage and consequent high prices, and to those persons who can afford to stand the loss during the winter months, is undoubtedly offered a fair return.

This year, probably for the first time, eggs have been brought from China in a fresh state, and dealers who handled them say that these were received in very good condition. This brings another problem before our now already overburdened poultryman, in that competition from such far-distant countries is likely to affect his market. Dried eggs have been coming from China for a good many years, and it may have a decided influence upon our poultry business in the future.

As a conservation measure, more eggs were put down in waterglass this year than ever before, and this form of preservation seems to be becoming more popular each year. Its effect is certainly to steady the egg market during the season of low prices, and should be commended. The same principle of con-

servation of our best breeding stock at this time applies to poultry as well as to cattle.

The continued interest in egg-laying contests is noted with satisfaction, for these contests are among the chief factors in the selection of birds of high productive power. At this time there seems to be a demand for cool thinking rather than hysterical action, in order that one of our greatest industries may be saved.

INSECT DEPREDACTIONS.

The present year has been rather prolific in troubles caused by insects. Thousands of gardens, made by persons inexperienced in this work, have greatly increased the supply of plants available for insect attack, and in many cases ravages have taken place of which the owners of the gardens were entirely unaware until destruction had proceeded to a point where it was too late to save the crop.

An unusual pest this year, one rarely reported from the State heretofore has been the potato plant louse, which, in certain portions of the State, has caused a great deal of damage. Stalk borers have also been unusually abundant, and corn, in some parts of eastern Massachusetts, has been attacked by a new and dangerous pest not hitherto reported from this country.

Early in the season, flea beetles on potatoes and tomatoes were unusually abundant, and the red bug was unusually plentiful during the summer. The periodical cicada, after seventeen years, again appeared on Marthas Vineyard, thus adding another record to the interesting history of this insect in Massachusetts. The rose bug was rather abundant during the summer, and an unusual number of complaints about the grape vine tomato gall were received. In the western part of the State extensive injury in August to shade and forest trees, particularly maple and beech, was found to be caused by certain caterpillars.

In the fall numerous complaints of injury caused by *Datanas* and the red-humped caterpillars were received, and, in general, the cabbage worm and squash vine borer appear to have done considerable injury during the season. These have been the chief entomological features found this year.

NURSERY INSPECTION.

The work of the nursery inspection service this year has been, as in 1916, in two parts, — nursery inspection proper, and work on the white pine blister rust. In the nursery inspection the usual examinations of nurseries for pests and diseases have been carried on, imported nursery stock and fruit have been examined, and the usual duties of the office have been continued. Two or three cases of pests and diseases, liable to be serious in Massachusetts, have been found on stock coming into the State, and in all these cases the plants having these troubles have been destroyed. The nurseries themselves have been found fully up to the standards of previous years, and the work, which is protective in its nature, has been fully as effective as hitherto.

The work on the blister rust is still in progress, and no complete statements, therefore, can be made. Inspection for this disease has been made in every city and town in the State, and, in areas where greatest danger of the disease existed, special attention has been given to bringing it, as far as possible, under control. The labor situation, enlistments and the draft, together with an unfortunate but necessary change of policy for the work during the summer, have had an injurious effect upon the results; but many thousands of diseased pines, currants and gooseberries have been found and destroyed, thus checking a farther spread of the disease from those plants, and in several areas, where the pine is particularly valuable and should be preserved at any cost, eradication of all currants and gooseberries has been undertaken, these being a distinct menace to the pines so long as they existed. In the last Legislature a bill providing compensation for owners of undiseased plants removed because they were a menace was rejected. This is much to be regretted, for while no one should claim compensation for diseased plants destroyed, those yet undiseased, but necessarily removed because of their liability to disease and their power to convey it to pines, stand on a different basis, and it would seem that the owner of such plants should receive at least partial compensation for his loss.

Owing to the resignation of Dr. H. T. Fernald and the increasing work of the nursery inspection service, it is essential

that a man should be employed who can give his whole time to the work, and therefore that a living salary should be paid. I therefore recommend that the present clause of the law, fixing the salary at \$500, be amended by giving the secretary of the State Board of Agriculture authority to fix the salary, with the approval of the Governor and Council.

APIARY INSPECTION.

The work of apiary inspection has been carried on as before, under the direction of Dr. B. N. Gates, who will report in detail to the Board. The attention of the inspector this year has been largely confined to following up previously infected areas, giving particular assistance to those beekeepers who were experiencing difficulty in suppressing disease. Especial emphasis has been laid on the production of extracted honey, and as a result many beekeepers who have heretofore neglected this product have given it consideration. Although the season was not favorable for a crop of light honey, considerable marketable honey has been produced, and this has met with a ready local sale.

Assistance has been given beekeepers in procuring their glass containers as there has been difficulty in securing them from factories or jobbers. A list has been compiled of the beekeepers owning extractors, and the majority of them have signified their willingness to loan their extractors to extract the honey for neighboring beekeepers.

The inspector of apiaries was appointed collaborator in beekeeping of the Bureau of Entomology of the United States Department of Agriculture, and through co-operation with this department has been enabled to distribute many Federal apiary publications as well as the State publications.

As a link between the beekeepers of the State and the office of the inspector, 58 local agents in beekeeping have been appointed by the secretary of the Board. These agents serve without pay, and keep the central office informed of conditions in their neighborhood. As fast as agents are available they will be appointed for the remaining towns of the State.

With the present scarcity of sugar there is danger that beekeepers will fail to properly feed their bees for the coming

winter. In many parts of Massachusetts the bees did not supply themselves with sufficient stores for winter, and for this reason the inspector has sent a warning letter to beekeepers, urging them to prepare their bees for winter quarters.

That the apiary inspection service is appreciated by the beekeepers of the State is shown by the constant calls made on the inspector for assistance.

STATE ORNITHOLOGIST.

The State Ornithologist, Edward Howe Forbush, laid out an immense amount of work for the year. With the approval of the Board, bills were introduced (1) to provide him with an assistant, (2) to extend his educational work into the rural schools, (3) to provide for publication of the facts ascertained by him in a volume with colored plates illustrating all the birds of the Commonwealth, and (4) to institute a State-wide inquiry regarding the distribution of these birds within the State. As a result of the introduction of these bills an inadequate appropriation was allowed by the Legislature for assistance to the ornithologist, and Arbor Day was made Bird Day also. The other bills calling for appropriations failed on account of the necessity of appropriating immense sums for the war.

During the year the ornithologist has assembled much material for publication which could not be printed owing to scant appropriations and the necessity forced upon the Board by the war of publishing matter relating to the production and conservation of food. The ornithologist made a personal investigation into the present status of water birds breeding on our coast, studied the causes of the decrease of the heath hen, and made recommendations to the Commissioners on Fisheries and Game looking toward the protection of diminishing species. In May he made an inquiry into the destruction of insectivorous birds by the elements. He secured for publication a list of the museums and other institutions of the State where collections of birds may be seen and examined. He organized a corps of about 200 observers in the various counties of the State to study and report upon the distribution of birds in their localities.

He has been appointed again by the National Secretary of Agriculture as a member of the Advisory Board which considers

proposed Federal regulations for the protection of migratory birds, and participated in the deliberations of the Board at St. Paul in September.

The Board of Agriculture co-operated with the State Grange and the Massachusetts Audubon Society in the celebration of Bird Day at Dudley and Amherst, in which the children of the public schools participated. Mr. Forbush spoke at these meetings, and he has delivered altogether nearly fifty lectures and addresses during the year, most of them illustrated by stereopticon.

THE DAIRY BUREAU.

The Dairy Bureau has found more violations of oleomargarine and renovated butter laws than for some years previous, 93 cases having been prosecuted and 93 convictions obtained.

The clean milking contest has been continued, but on account of shortage of help on dairy farms the number of entries was less than in 1916.

A new proposition has been advanced by the Bureau, viz., a grade heifer contest for calves born between April 1, 1917, and July 31, 1918, prizes for which are to be awarded in the autumn of 1918. The need of more and better dairy cows is great, and it has been thought wise to encourage the raising of the best heifer calves.

The members of the Bureau and the general agent made a brief investigation of dairy conditions in the State of Vermont.

Mr. Harwood attended two food conferences in Washington, District of Columbia, and a mass meeting of dairy interests at the National Dairy Show, Columbus, Ohio. He has delivered fifteen lectures and written a number of folders and leaflets on milk, milk products and the food value of milk. Some 200,000 copies of these publications have been distributed.

Mr. Lombard attended the annual meeting of the International Association of Dairy and Milk Inspectors at Washington, and was elected president of the organization for the ensuing year.

On the whole, the year has been one of success, and full details of the work may be found in the twenty-seventh annual report of the Dairy Bureau.

THE APPLE GRADING LAW.

The apple grading law has entered on the second year of its enforcement, and both growers and dealers are now fairly familiar with the law. Mr. R. E. Annin, Jr., has been in charge as chief deputy inspector, and four other inspectors have been employed intermittently.

The principal apple shipping section of the State is in Franklin County, where about 100,000 barrels are shipped annually from the stations at Buckland, Shelburne Falls, Colrain, Charlemont and Greenfield. An apple inspector has been located in this territory during October and November, and has thus been able to keep close track of these shipments. Few of the apples in this section come to Boston, the majority being sold to buyers from Providence, Ballston, New York, New York City, Pittsburg, Indianapolis and Chicago. Up to the outbreak of the war about 20 cars a year went to South America. This will show what a wide distribution Massachusetts-grown apples have, and how important it is that they should be packed and branded so as to reflect credit on the State.

Apple grading laws are now becoming almost universal. In the northeastern part of the country thirteen States have laws, and it will certainly not be long before a State without such a law will be conspicuous.

A number of minor violations of the law have been found, and in these cases your secretary has deemed it sufficient to call the attention of the party responsible to the error, and to warn him that we would expect to find his shipments correctly branded in the future. Of minor violations of this kind we have had 69.

Four cases have been entered in court and three convictions secured. The other case is now pending. In one case the defendant pleaded guilty, and the case was filed at the suggestion of the Commonwealth. In the other two cases the defendant was convicted and a fine imposed. The cost of enforcing the law has been about \$2,100.

There are three minor amendments to the language of the law which should be made to strengthen it. These amendments do not alter its intent in any way. In the first place,

the present section 3 of the law in its present form provides that the legal marks on barrels can be accompanied by certain other marks, provided these marks are not inconsistent with or more conspicuous than the marks required by law; this is phrased as a permission, and the language of this section should be changed so as to make it a prohibition.

In the second place, the maximum penalty for second offences should be increased from \$100 to \$200. There is no minimum penalty, and the court may still impose as small a fine as it desires. In case of flagrant and repeated violation the present maximum fine of \$100 is hardly large enough to act as a deterrent, especially in the case of large buyers conducting operations of considerable size.

In the third place, two more sections should be added, — one exempting from the law apples packed under the United States law, and the other giving specific authority to the secretary of the State Board of Agriculture to enforce the act and prosecute violations of it. This authority may be implied from other parts of the law, but it is very desirable that it should be definitely stated.

THE FAIRS.

The greatly increased interest in the quantity and source of our food supply was undoubtedly a factor in a splendid attendance at most of our agricultural fairs. A number of fairs enjoyed exceptional prosperity, notably the Northampton Fair, which has just erected two new brick buildings, and the Greenfield Fair, which had the largest attendance in its history.

Owing to the passage of the anti-aid amendment the reimbursement from the State which the fairs will receive in August, 1918, will be the last they can receive in this way. Your secretary believes, however, that it would be a grave mistake for the State to abandon the practice of offering prizes for worthy displays of agricultural products, and believes that in any reorganization that is effected provision should be made for offering these prizes directly by the State instead of by the society. While the anti-aid amendment forbids the payment of any money to private organizations there is nothing in it to prevent the State's offering prizes, as, for instance, for potatoes at the Blandford Fair, the classes to be judged by judges ap-

pointed by the Board, and the prize money to be paid directly to the winners from the office of this Board. This will mean, in other words, that the administrative work of offering prizes for agricultural objects will have to be done directly by the Board instead of by the societies as heretofore.

I therefore recommend the introduction of a law into the Legislature providing for the distribution of prize money by the State Board of Agriculture, and that an appropriation of \$40,000 be made for this work.

POULTRY PREMIUM BOUNTY.

Seventeen poultry associations applied for State bounty during the past year. As the amount applied for was greater than the amount allowed by law, the applications were scaled down, and each society received 90.29 per cent of the amount applied for.

The following table shows the societies which received bounty, with the amount applied for and the amount received, respectively: —

NAME OF SOCIETY.	Amount paid in State Premiums.	Allotment.
Abington,	\$88 00	\$79 47
Amherst,	147 50	133 18
Attleboro,	217 00	195 93
Eastern Massachusetts,	84 00	75 85
Deerfield Valley,	78 00	70 43
Gloucester,	86 00	77 66
Holyoke,	223 00	201 35
Lenox,	102 50	92 55
Milford,	161 00	145 37
New England,	127 50	115 12
Northern Berkshire,	56 50	51 02
Northampton,	118 00	106 54
Norwood,	108 00	97 51
Quannapowitt,	88 00	79 47
Springfield,	182 00	164 33
Taunton,	48 00	43 35
Worcester,	300 00	270 87
Total,	\$2,215 00	\$2,000 00

For the coming year the law has been so amended that the handling of this matter will be greatly simplified both for the societies and the Board. The societies, by the new law, are required to furnish the Board with an estimate on or before November 1 of the amount which they expect to offer in State first premiums, and each society will be limited to \$200. The Board will then present this estimate to the Legislature, and will reimburse the societies on the basis of the amount they actually pay out, provided it does not exceed the maximum. Fourteen societies have applied to the Board for bounty in 1918, the total amount applied for being \$2,930.

The new law will only be in operation, however, for one year, as, owing to the passage of the anti-aid amendment to the Constitution, direct payments of money to poultry societies cannot be made after 1918. Your secretary feels, however, that the principle of State prizes for the encouragement of poultry breeding should be continued, and that it would be an injury to the poultry business in this State to have it discontinued. Nothing in the anti-aid amendment prevents the offering of prize money by the State directly to individuals, and this method should be followed in awarding poultry premium bounty.

BOYS' AND GIRLS' AGRICULTURAL CLUB WORK.

The agricultural clubs have been carried on under the direction of Mr. George L. Farley, and the total enrollment has reached 97,452 members. In addition to the supervisor of this work there is now at the agricultural college an assistant supervisor, a pig club agent, a poultry club agent and a home economics and canning club agent.

All parts of the State are showing a steadily increasing interest in this work, and it was given a special impetus this year by the campaign for greater food production carried on by the State Public Safety Committee.

The Brockton Fair Association this year increased the amount given for furthering this work from \$200 to \$500. The Hampshire, Franklin and Hampden Agricultural Society erected a building costing \$5,000, to be used as an exhibit hall for club work. The Barnstable County Agricultural Society held a club

exhibit for the first time, and appropriated money for premiums; and a number of other fairs showed increased interest by additional appropriations.

There have been 230 paid and 240 unpaid local leaders connected with the work during the past season; and the \$2,000 distributed in prizes by the State Board has helped materially in arousing new interest and retaining the old.

FARMERS' INSTITUTES.

The institute work for 1917 was conducted along the usual lines, with good results.

Two of the societies held four institutes each; 9 held three; 4, two; 9, one each, and 8 did not hold any. In addition, 19 outside organizations held institutes to which the Board furnished speakers. The aggregate attendance for the year was 11,450, or an average of 98 per session.

The list of lecturers, with subject index as revised and approved by the committee on institutes and public meetings, contains the names of four new speakers, one each on bee-keeping, birds, poultry and the Federal Land Bank. Five names were discontinued, four on the recommendation of the committee, and one at the suggestion of the speaker.

Your secretary attended the annual meeting of the American Association of Farmers' Institute Workers, at Washington, November 12 to 14, and, as a member of the Standing Committee on Co-operation, with other educational agencies presented the report of that committee, and also made a brief statement on the institute work of Massachusetts for the past season.

Our appropriation of \$8,500 for "Dissemination" proved insufficient this year to take care of the increased demand for institute speakers, and it was necessary to refuse many requests. I have therefore estimated an additional \$1,000 for disseminating useful information, \$700 of which will be used to meet the call for institute speakers, and \$300 to permit of the intermittent employment of a market agent to conduct market investigations in the State.

EXHIBITIONS AND CONTESTS.

The Eastern States' Exposition held a very successful fair at Springfield from October 12 to 20, 1917, and the Board was well represented by a splendid State exhibit of apples, cranberries, potatoes, and market-garden products gotten together under the direction of Mr. A. W. Lombard. Dr. B. N. Gates also brought together a very attractive display of extracted honey and apiary appliances at this time.

The following special medals were offered by the Board to exhibitors at the Eastern States' Exposition: —

A silver medal for the grower winning the most prizes at the Eastern States' Fruit Show was won by Wright A. Root, Easthampton.

A silver medal for the best collection of vegetables from a vegetable growers' association of Massachusetts was won by the Boston Market Gardeners' Association.

A silver medal for the best limited collection of vegetables from an individual grower of Massachusetts was won by J. M. and A. H. Smith, West Springfield.

A bronze medal for the best unlimited collection of vegetables from an individual grower from Massachusetts was won by E. L. Lewis, Taunton.

A special medal was awarded to Miss Margaret Mahaney of Concord for the work she has done in turkey raising. This medal was awarded after her place had been visited by the committee on domestic animals of the board.

At its public winter meeting in Springfield the annual corn show, exhibit of boys' and girls' club work, and milk, cream and butter show were held. Prizes were again offered for beekeepers' exhibits at the Worcester and Greenfield fairs. Instead of conducting an orchard contest the money for this appropriation was used for the prizes for Massachusetts winners at the New England Fruit Show, and for the publication and distribution of a circular on the use of "fruit as a food." This proved to be a very popular circular, and 85,000 copies were distributed, particularly among fruit growers and retail grocers throughout the State. Your secretary feels that this sort of advertising in order to increase consumption is the very best method of increasing production; for fruit or any other farm commodity

will certainly be produced in sufficient quantity if there is a profitable demand for it.

The New England Fruit Show was held in Boston from October 31 to November 4 in connection with the annual meeting of the American Pomological Society and the fall exhibition of the Massachusetts Horticultural Society. An exhibit of Massachusetts apples set up by the Board attracted much favorable comment. Unfortunately, the people of Boston did not seem to know about the show, and the attendance was light.

A prize of \$10 was offered by the Board at the meeting of the New England Turkey Breeders' Association held in Concord November 17 and 18.

The increase in special exhibitions throughout the State each year places demands upon the slender appropriations which are hard to meet. These exhibitions are certainly worthy of support, as they constantly serve to remind people of the specialties which Massachusetts agriculture seems to be developing. To take care of increasing demands and to place a suitable exhibit in the State Building next year, I recommend that the appropriation for special exhibitions be increased from \$2,000 to \$4,000.

MEETINGS OF THE BOARD.

The annual business meeting of the Board was held in Boston on December 5 and 6, 1916, and the usual business transacted and officers elected.

The fifty-fourth annual public winter meeting of the Board was held at Springfield on January 6, 7, 8, 1917. The Massachusetts Dairymen's Association and the Massachusetts Milk Inspectors' Association met with the Board as usual at that time, and the Massachusetts Fruit Growers' Association also held their annual convention at the same time and place. Probably owing to the fact that the National Dairy Show had been held in Springfield shortly previous, and the city had therefore had its fill of agricultural conventions, the attendance at the Board meetings was disappointingly small, in spite of an attractive program of able speakers.

Owing to the entrance of America into the war the executive committee of the Board voted to omit the usual summer field meeting.

CHANGES IN THE BOARD.

In the death of the late Frederick A. Russell of Methuen which occurred in October we lose one of our most beloved and honored members. Mr. Russell's membership on the Board covered a period of nine years, including four years of service as vice-president.

A man of rare courtesy, judgment and fairness, he won our regard as a friend and our esteem as a coworker. These feelings are fittingly expressed in the words of the resolution sent by the Board to the members of his family from which we quote.

The State Board of Agriculture hereby places on record its high esteem of Mr. Russell as a man, a citizen, a farmer and a friend. His loss is not borne alone by his family and this Board, but is distinctly felt by the community in which he dwelt and the Commonwealth to which he belonged. As a man he measured to the full stature in body and mind. As a citizen he was broad-minded and patriotic. As a farmer he had few, if any, peers in this Commonwealth, and as a friend he was loyal to the last degree. Such men are few. Such loss is great.

Other changes occurring in the personnel of the Board have resulted from the expiration of the terms of several of the members, and the delegation of members from two societies which were not entitled to representation last year, but which are eligible this year, namely, the Westport and Union Societies.

The following is a list of the new delegates to the Board, with the societies which they represent:—

George L. Averhill of Andover, Essex Agricultural Society; Fred M. Ford of Sheffield, Housatonic Agricultural Society; Samuel J. Goddard of Framingham, Massachusetts Horticultural Society; Charles E. Burgess of Nantucket, Nantucket Agricultural Society; Edwin F. Goodwin of Chester, Union Agricultural Society; and Charles R. Tallman of Westport, representing the Westport Agricultural Society.

WORK OF THE OFFICE.

A number of important changes in the office force of the Board have taken place during the past year. On June 8, H. Linwood White resigned as first clerk, to accept a position

with the Federal Farm Land Bank in Springfield. Mr. White came with the Board as second clerk in 1909, soon after his graduation from the Massachusetts Agricultural College, and was promoted to first clerk on the death of Mr. Legate in 1912. Mr. White was thoroughly familiar with all branches of the Board's work, and his experience and judgment have been of valuable assistance to the secretary and the department.

To fill Mr. White's place, R. Edwards Annin, Jr., was promoted from the position of second clerk, which he had filled since February, 1914. Miss Josephine W. Riley, who had been with the Board as stenographer since March, 1913, was promoted to the position of second clerk. Miss Helen M. Purcell, who had been Dairy Bureau stenographer, took Miss Riley's former position. The steadily increasing office work of the Board demanded the services of another stenographer, and Miss Mary Manning was employed for this position. In July Miss Jennie Todd was employed as clerk for the Dairy Bureau, and Mrs. Alice B. Harrington was employed in March as secretary to the State Ornithologist.

Since December 1, 1916, over 125 new library cards have been given out, and about 350 books loaned. During the summer we were unable to supply the demand for books on vegetable growing. This fall there have been many requests for books on swine, sheep and goat raising. It is to be regretted that we have so few books on these subjects. Very little trouble has been experienced with overdue books. If notified, books can be renewed for a week or more, provided there is no other demand for the same book. The library has also been widely used for reference, the majority of such requests being along statistical lines. The total amount spent for books and binding in 1917 has been \$113.72.

The crowded condition of the Board's quarters has been partially relieved by the addition of a private office for the secretary, large enough to accommodate committee meetings, and with the additional advantage of being fairly quiet.

While the food conservation program in the State has not been placed directly under the Board, the tremendous interest which has been aroused in all classes of our population by this question has been reflected by the increased calls at the office of

the Board, both through correspondence and personal calls, for information on agricultural subjects. The subjects of vegetable gardening, canning and storage of fruits and vegetables have been of most interest to inquirers, and the Board publications on these subjects have run through large editions.

In July your secretary was appointed as a member of one of the six district draft Boards for Massachusetts, and this has necessitated many days of work since about the middle of August. The district boards have to pass on all industrial and agricultural claims for exemption from the draft, and these boards are appointed for the period of the war. Your secretary tried to resign from this unsought position, but found that resignations were not accepted. For this reason permission was asked of the Governor and Council to appoint a special assistant in the office for the period of three months, beginning September 15. This permission was granted, and Mr. John H. Moore was appointed from that date. From present indications arrangements should be made to continue this new position during the coming year, and I am therefore recommending that the appropriation for clerical hire be increased to \$6,000.

EXTRACTS FROM THE TRESPASS LAWS.

The demand for the cloth posters carrying extracts from the trespass laws was greater this year than ever before, due largely to the increased planting, and although an additional \$300 was appropriated by the ways and means committee for use in printing a further supply of these posters we were unable to meet the demand. August 1 found the supply of 12,000 cloth and 700 paper signs completely exhausted, and since that time there has been a continuous call for them.

Of the 12,000 cloth signs printed at a cost of \$779.05, 494 copies were sold, 28 at 5 cents each and 366 at 6 cents each, it being found necessary, in order to comply with the authorization of the Legislature to sell additional copies at not less than cost, to increase the selling price 1 cent, beginning April 1.

The call for the poultry thieving posters, of which 1,000 were printed last year, was light, so that there are still about 700 copies on hand for distribution the coming year.

LEGISLATION OF 1917.

Of the nine recommendations introduced by the Board to the last session of the Legislature, six became law and three failed of passage. The bill to establish a director of organization and markets, the bill to amend the State drainage laws, and the bill to increase the appropriation for the State inspection of apiaries from \$2,000 to \$3,000, did not pass. The State Board of Agriculture and the State Department of Health were authorized jointly to make drainage surveys. The law relating to distribution of poultry premium bounty was amended; the apple grading law was amended so as to make the party responsible for the packing place his name on closed packages; and the appropriation for clerical assistance of the Board was increased from \$5,000 to \$5,300. Two new sections were added to the nursery inspection law in order to take care of the white pine blister rust situation, and an appropriation of \$50,000 was given to the Board for this work. Protection was removed from starlings.

A number of dog laws were presented to the Legislature, and out of them came the resolve appointing a special commission, of which your secretary is a member, to make a thorough revision of the dog laws and present them to the present Legislature.

A bill was also passed by the Legislature providing an appropriation of \$50,000 for the construction of a State building on the grounds of the Eastern States' Exposition, in Springfield, and a commission appointed to do the work, of which your secretary is also a member.

PUBLICATIONS.

The following publications were issued by this Board during 1917, and may be secured upon application to this office: —

NAME OF PUBLICATION.	Pages.	Number.
Agriculture of Massachusetts, 1916, Part I.,	246	1,500
Agriculture of Massachusetts, 1916, Part II.,	288	6,000
Report of secretary, 1916, ¹	65	400
Report of State Nursery Inspector (fifteenth annual report), .	31	600

¹ Separate from sixty-fourth annual report.

NAME OF PUBLICATION.	Pages.	Number.
Report of Boys' and Girls' Club Work,	13	1,000
Report of Dairy Bureau (twenty-sixth annual report), . . .	28	700
Report of Encouragement of Dairying Contests,	10	1,000
Ninth Annual Report of the State Ornithologist,	26	3,000
Seventh Annual Report of the State Inspector of Apiaries, .	23	1,600
Circular No. 2, ¹ Insecticides, Fungicides and Directions for their Use.	24	2,500
Circular No. 5, ¹ Pork Making for Massachusetts Farmers, .	12	3,000
Circular No. 6, ¹ Three Common Scale Insects,	9	2,000
Circular No. 34, ² Household Accounting,	15	2,500
Circular No. 42, ¹ The Home Vegetable Garden,	18	10,000
Circular No. 47, ² Bird Houses and Nesting Boxes,	24	3,500
Circular No. 50, ² Apple Grading and Packing,	27	1,500
Circular No. 55, ¹ Canning in Glass in the Home,	11	14,500
Circular No. 63, ³ The Improvement of Live Stock,	10	4,500
Circular No. 64, ³ Breeding and Selecting Fowls for Egg Production.	27	6,000
Circular No. 65, ³ The Maintenance of Soil Fertility,	15	4,500
Circular No. 66, ³ Advertising Agricultural Products,	13	5,000
Circular No. 67, ³ Market Gardening,	12	500
Circular No. 68, ³ Pasteurization of Market Milk,	14	3,500
Circular No. 69, ³ Co-operative Dairying,	12	4,500
Circular No. 70, ³ Marketing Milk and Cream,	8	4,000
Circular No. 71, ³ The Oxford Bears Fruit Growers' Association,	11	4,500
Circular No. 72, ³ Business Organization as related to Agriculture,	13	4,500
Circular No. 73, Potato Growing in Massachusetts,	16	2,500
Circular No. 74, Common Potato Diseases and their Control, .	11	3,000
Circular No. 75, Common Storage of Fruits and Vegetables, .	15	6,000
Nature Leaflet No. 3, ⁴ The Black Knot of the Plum and Cherry,	3	1,500
Nature Leaflet No. 10, ⁴ The Datanas,	4	1,500
Nature Leaflet No. 13, ⁴ Peach Leaf-Curl,	4	1,500
Nature Leaflet No. 14, ⁵ Owl Friends,	6	2,000
Nature Leaflet No. 18, ² Plant Lice or Aphids,	3	2,000
Nature Leaflet No. 19, ⁴ Edible Weeds and Pot Herbs,	5	2,000
Nature Leaflet No. 21, ⁴ Potato Rots,	4	2,500
Nature Leaflet No. 28, ⁵ The Garden Toad,	4	2,000
Nature Leaflet No. 30, ⁴ Planting and Care of the School Garden,	7	2,500
Nature Leaflet No. 38, ⁴ How to Plant,	8	2,500
Nature Leaflet No. 46, ² How to beautify the Home Grounds, .	5	2,000

¹ Second edition, revised.² Third edition, revised.³ Separate from sixty-fourth annual report.⁴ Fourth edition, revised.⁵ Fifth edition, revised.

NAME OF PUBLICATION.	Pages.	Number.
Leaflet B (Milk),	1	6,000
Leaflet C (Milk),	1	5,000
Leaflet D (Milk),	1	7,000
Leaflet E (Milk),	1	111,000
Leaflet F (Milk),	1	5,000
Leaflet G (Milk),	1	50,000
Leaflet H (Milk),	1	8,000
Leaflet I (Milk),	1	7,500
Leaflet J (Milk),	1	7,000
Food Value of Milk,	4	35,000
Dairy Laws, 1917,	1	200
Directory of Agricultural Organizations,	17	200
List of Institute Speakers,	31	400
List of Useful Books on Agriculture,	12	300
List of Available Publications,	11	3,500
Fruit as a Food Circular,	4	85,000
Nursery Inspection Circular No. 9, Law relating to the White Pine Blister Rust in Massachusetts.	1 ^a	1,500
Supplement A, Massachusetts Apple Grading Law,	1	10,000
Apiary Inspection Bulletin No. 12, Interpretation of the Net Weight Regulations for marking Packages of Honey.	10	4,500
Nursery Inspection Bulletin No. 3, Digest of Laws concerning the Shipment of Nursery Stock.	25	200
Experiment Station Bulletin No. 172,	16	100
Bulletin No. 1, ¹ Poultry Culture,	159	4,000

¹ Fifth edition, revised.

The same number of copies of Part I, of Agriculture of Massachusetts was printed as last year. The demand for the volume was large, and, with the exception of a few reserves, the 1,500 copies were exhausted early in the summer. A further saving has been effected in the printing of the annual report and I therefore recommend that this appropriation be reduced from \$5,000 to \$4,500.

As would be expected, when people were urged from all sides to plant every bit of available land, and to conserve food in all possible ways, there was a tremendous call for the Board's circulars on "The Home Vegetable Garden," by Allen French, of which 10,000 copies were printed; "Canning in Glass in the Home," by Mrs. Sarah Elizabeth Belt, of which there were 14,500 copies; "Fruit as a Food," of which 85,000

copies were printed, and "The Common Storage of Fruits and Vegetables," by Edward Howe Forbush, which ran through one edition of 3,000 copies, and is now in its second edition of a like number.

The other publications were equally well received, and we have had many letters of commendation on the thoroughness with which the various subjects were treated.

BULLETINS OF MASSACHUSETTS AGRICULTURE.

Bulletin No. 1, on "Poultry Culture," fifth edition revised, was the only one published this year. This bulletin, of which 4,000 copies were printed, consists of 159 pages, and contains several new articles, among which are "Opportunities in Poultry Culture in Massachusetts," by John C. Graham; "Natural Incubation and Rearing of Poultry," by Charles E. Allen; "Breeding and selecting Fowls for Egg Production," by James E. Rice, and "Capons and Caponizing," by Henry D. Smith.

It was hoped to add a new bulletin to the series this year, but the call for the other publications of the Board so heavily taxed the appropriation for "dissemination" that this was not possible.

LEGISLATIVE APPROPRIATIONS.

OBJECT FOR WHICH APPROPRIATED.	1917.	
	Appropriation.	Used.
Administration: —		
Secretary's salary,	\$3,000 00	\$3,000 00
First clerk,	1,800 00	1,800 00
Clerks,	5,315 00	5,303 69
Secretary's travel,	500 00	373 47
Incidentals,	3,500 00	3,496 70
Printing reports,	5,000 00	3,946 78
Members' travel,	1,707 42	1,255 12
Inspection and encouragement: —		
Nursery inspection,	14,000 00	13,992 44
Apiary inspection,	2,000 00	1,911 20
State Ornithologist,	3,500 00	3,500 00
Disseminating information,	8,552 99	8,548 95
Dairy Bureau,	9,800 00	9,798 93
Encouragement of dairying,	6,263 90	4,317 21
Encouragement of orcharding,	500 00	496 70
Bounties to agricultural societies,	30,000 00	28,027 13
Bounties to poultry associations,	2,000 00	2,000 00
Premiums to children and youths,	2,000 00	1,998 65
Special exhibitions,	2,000 00	1,979 08
White pine blister rust,	50,000 00	26,576 18

THE BOARD AND THE ANTI-AID AMENDMENT.

The acceptance by the people at the last election of the constitutional amendment prohibiting the payment by the State or any county or town of any money to any organization or institution not publicly controlled, deeply affected the personnel of this Board, for upon its becoming effective on October 1, 1918, 31 persons will automatically cease to be members because of the peculiar wording of the law creating the Board, which makes representation by certain members contingent on the agricultural societies receiving aid from the State.

Your secretary in following the matter in the Constitutional Convention deemed it his duty to call the executive committee

together and acquaint them of the conditions likely to arise out of a favorable vote by the people on this question. This committee met on August 17, and after going over the matter voted to present to the Constitutional Convention the following protest: —

Whereas, The passage of the anti-aid amendment in its present form would prevent the Commonwealth or any political subdivision thereof from encouraging agriculture by the granting of appropriations to agricultural organizations; and

Whereas, It is the practice of all civilized countries to foster agriculture by the payment of bounties and otherwise, and European countries are doing this even under war conditions, and this practice is now carried on by practically all other States of the Union, and has been by Massachusetts for one hundred years; therefore, be it

Resolved, That the State Board of Agriculture register a strong protest against the discontinuance of State and county, or other governmental aid, to agricultural organizations, and respectfully request that such organizations be definitely exempted from the operation of the amendment.

This resolution and the following letter were accordingly mailed to the members of the Constitutional Convention, but did not in any way change the vote, which was overwhelmingly in favor of the amendment, and the decisive vote of the people at the polls leaves no doubt in our minds that a change in our laws along these lines is necessary.

AUGUST 20, 1917.

To Members of the Constitutional Convention.

I am enclosing copy of a resolution which was adopted by the executive committee of the State Board of Agriculture at a meeting held Friday, August 17, 1917.

Very truly yours,

WILFRID WHEELER,
Secretary.

The effect of State aid to agriculture is of vast importance, and while this vote does not of necessity mean that the State will forbid aid to agriculture, it does mean that it will not continue its aid as in the past, — through incorporated agricultural societies.

The effect on this Board is to reduce it from a membership of 41 to 10, retaining those persons specifically mentioned in the law (chapter 89, Revised Laws).

CONCLUSION.

In concluding this report there is one matter of importance confronting the farmers this coming year to which I wish to call especial attention. We are going to be urged to produce even greater crops than this year in face of an adverse labor, fertilizer and seed situation. Many of our laborers and even some of ourselves are going to be claimed for the army. Materials of all kinds and interest rates will undoubtedly be higher, while the market for our products will be as uncertain as ever. Agriculture is going to come more and more in competition with industries, particularly in the labor market, and it is becoming more and more evident that if food is produced another year in large quantities it has got to be produced by fairly high-priced labor, and the consumer has got to pay the increased price largely due to the labor situation. All business is demanding a fair return on its investment. No one seems to consider that the farmer should have the same privilege.

There is already a movement on foot among some of the larger agricultural organizations to ally themselves with the American Federation of Labor in an effort to organize agricultural labor. We as farmers have always avoided this issue as far as possible, but it seems to your secretary that it might bring to a direct issue some of the great problems which confront us, and force upon the attention of the public the necessity of the farmer getting more of the money which is ultimately paid for food. There is a certain romance and speculation connected with agriculture which no doubt keeps many persons in the business just because they can make a living and hope some day to make some money. Even the most successful never make money in the sense that it is made in big business. We are often constrained to ask why the basic industry should be unprofitable, and especially why at this time we should be asked to run our farms at no profit when business is demanding a profit or a gain; why the farmer should be patriotic if patriotism means running our farms unprofitably.

In our unorganized condition each man has got to answer these questions himself, always holding in mind that we are now at war; that our young men are offering their lives that we may be spared a greater sacrifice, and that while our

sacrifice is financial theirs is life itself; and further, that if the lesson brought home to us by their experiences does not sink in deep enough so that our position may be made secure after our country's danger is past, then indeed the farmer deserves to remain in the ranks of the poorest paid occupation which the country knows. Our only solution to the problem lies in organization, but only that business organization which places agriculture on the same plane as our industries.

SUMMARY OF RECOMMENDATIONS OF THE STATE BOARD OF AGRICULTURE.

RECOMMENDATIONS OF THE SECRETARY (ACCOMPANIED BY BILLS).

For Action by the Board.

1. That a bureau of markets be established under the State Board of Agriculture. (Bill No. 1.)
2. That the mill acts be amended so as to permit damming streams for the irrigation of farm crops. (Bill No. 2.)
3. That the appropriation for special exhibitions be increased from \$2,000 to \$4,000. (Bill No. 3.)
4. That the salary of the State Nursery Inspector be fixed by the Governor and Council. (Bill No. 4.)
5. That certain perfecting amendments be made to the apple grading law. (Bill No. 5.)
6. That the dog law drawn by the commission to revise the dog laws be supported.

RECOMMENDATIONS OF THE SECRETARY RELATIVE TO CURRENT APPROPRIATIONS (NOT ACCOMPANIED BY BILLS).

For Action by the Board.

1. That the appropriation for the dissemination of useful information in agriculture be increased from \$8,500 to \$9,500.
2. That the appropriation for printing the annual report be reduced from \$5,000 to \$4,500.

Respectfully submitted,

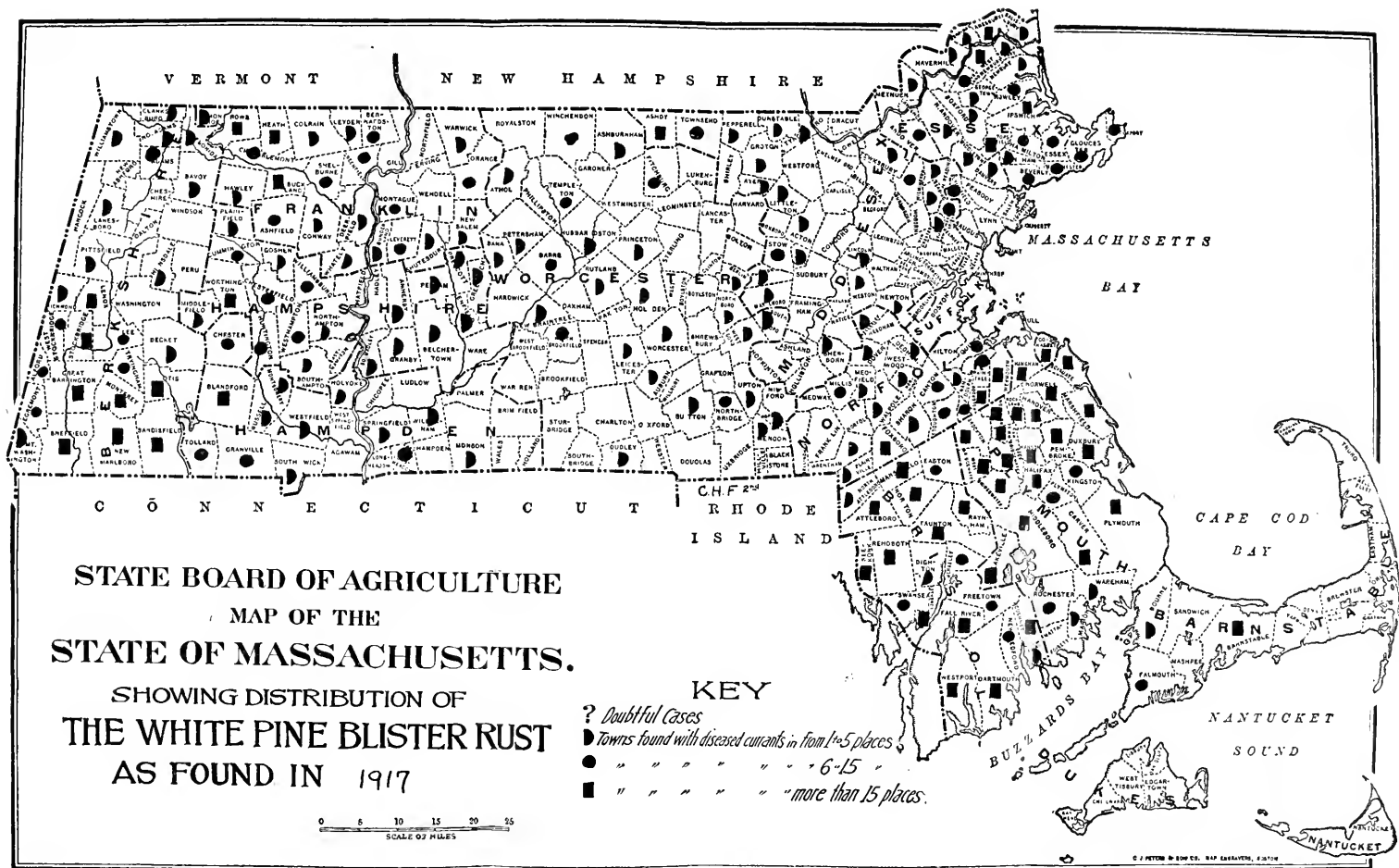
WILFRID WHEELER,
Secretary.

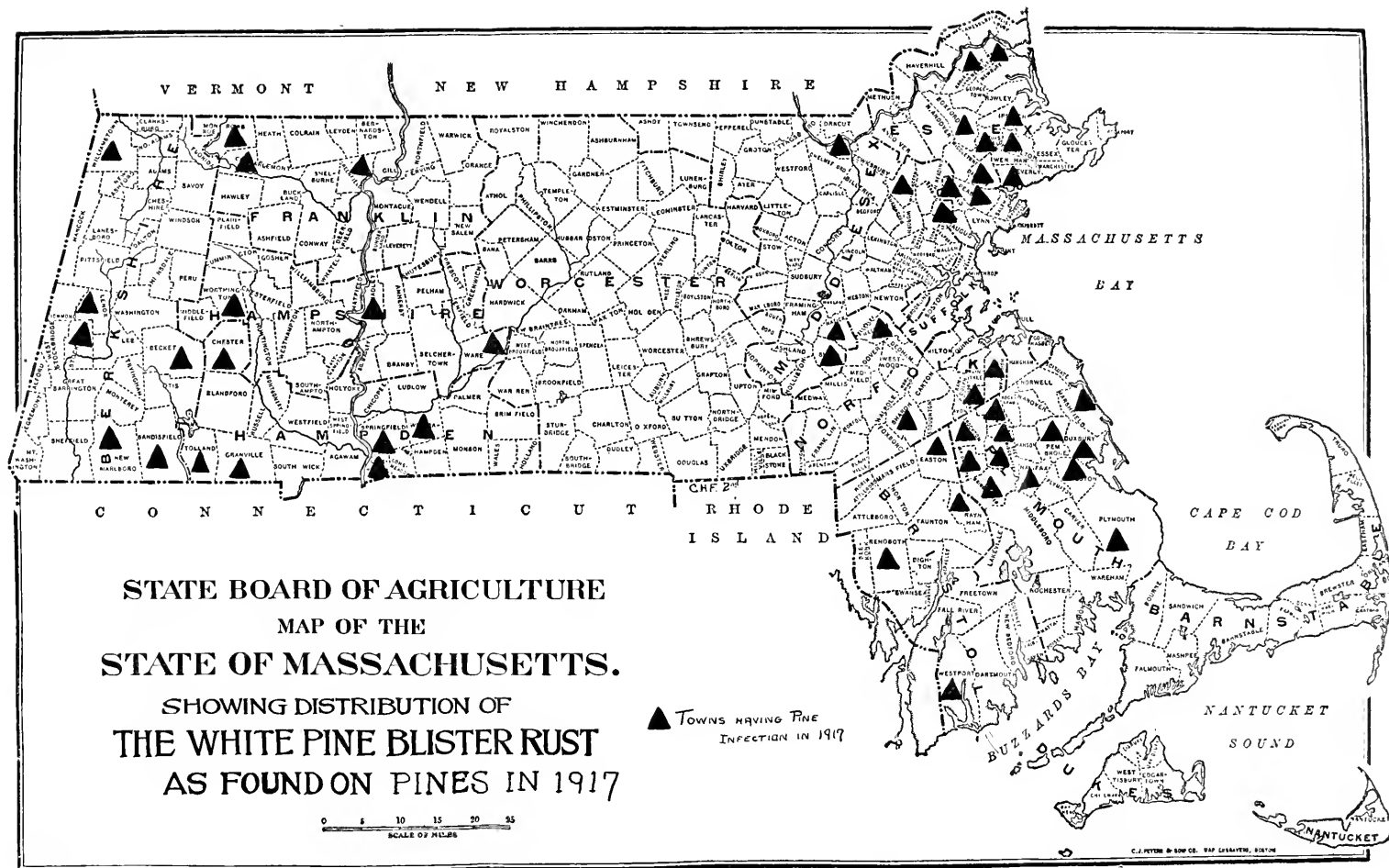
SIXTEENTH ANNUAL REPORT

OF THE

STATE NURSERY INSPECTOR.

PRESENTED TO THE BOARD AND ACCEPTED,
JANUARY 7, 1918.





SIXTEENTH ANNUAL REPORT OF THE STATE NURSERY INSPECTOR.

To the State Board of Agriculture.

I have the honor to present herewith the sixteenth annual report of the State Nursery Inspector.

For two years now the nursery inspector has had, in addition to his former duties, the work on the white pine blister Rust in this State. Last year this duty took much of his attention. This year, with much more work and a larger appropriation for the rust work, it was evident that it would be impossible for him to give much personal attention to the ordinary inspection work, and for that reason all supervision of the nursery inspection, except where matters of policy or important details arose has been in charge of Chief Deputy R. H. Allen who has had a number of years' experience, and who has mainly prepared that part of this report which deals with the inspection service.

WHITE PINE BLISTER RUST WORK. IN CO-OPERATION WITH THE UNITED STATES BUREAU OF PLANT INDUSTRY.

A year ago, when my annual report was made, we had for the first time a fairly complete knowledge of the status of the blister rust disease in Massachusetts. Every town in the State had been visited, and more or less complete knowledge of its condition had been obtained. Three large areas having an apparently continuous infection had been found, viz., in Essex County, southern Berkshire County, and a belt from Kingston across to the Rhode Island line, and extending about from Quincy to Kingston at its eastern end, and from Franklin to Fall River on the west.

At the beginning of the season our inadequate knowledge of the situation had led to the belief that these areas were much

smaller than was really the case, and eradication work was begun in Ipswich, Topsfield and Hamilton in Essex County, and in Lenox, Stockbridge and Lee in Berkshire County. The scouting of the season showed, however, a more or less general though scattered infection over the State, and in order to complete the scouting eradication was finally stopped and the scouting completed, so that as full information as possible might be placed before the Legislature.

A bill prepared by those most interested in the preservation of our white pines was presented to the Legislature early in the session after several meetings, at one of which the writer was present to give information as to the actual conditions existing. It should be stated, however, that he did not prepare the bill. It was recommended that the Legislature appropriate \$65,000 for the work of control; that diseased plants, either pines or Ribes (gooseberries and currants) might be taken out and destroyed immediately upon their discovery, and that any others so situated as to be a menace might also be destroyed; and that compensation be allowed for plants not actually showing the disease but destroyed because of their being so located as to be a menace.

There was a prolonged delay in acting on this bill. The rapid development of war conditions, and pressing demands caused thereby, together with a certain amount of opposition, resulted in keeping back final action for months, during which much valuable work could have been carried on, and the bill was not signed until May 17. In its final form no reimbursement for plants not diseased which it seemed necessary to destroy was allowed, and the appropriation was reduced to \$50,000.

The Bureau of Plant Industry of the Federal government followed the progress of the bill, and representatives of the Bureau appeared at committee hearings to state the Federal interests in the subject as related to State interests, and offered to meet any appropriation made by the State, dollar for dollar, under certain conditions, the expenditure to be supervised by the State official placed in charge of the work, within stated restrictions. Final action by the Legislature, therefore, provided a total of \$100,000 available for the work before June 30, 1918, which

makes it possible to continue the work during the coming year under a clause of the State act permitting any unexpended balance to be spent in 1918.

Plan of Work.

Work on the rust in the other States and Canada has hitherto mainly consisted of scouting with trained crews to ascertain the distribution of the disease and to eradicate what was found. Last spring in this State work of this kind was unnecessary, as the scouting of the previous year had covered the State, and the approximate conditions at least were known for every town. A new plan of operation was therefore necessary, and with no example elsewhere to follow.

It seemed desirable to form plans for work, therefore, on some new basis, and as a first step a managing committee, informal in its organization, was selected which should consider all general plans for State work, advise on any general matters which might arise and assist in general. This committee was composed of the secretary of the Board of Agriculture, the State Forester and the State Nursery Inspector. The plan finally adopted was to divide the State into districts, each of which was to be in charge of a superintendent who should select a man in each town as a local blister rust worker, to devote as much of his time as necessary to work in the town, examining pines for the disease as late in the spring as this was possible, then working on Ribes the remainder of the season.

It was estimated that each local man should be able to examine all the cultivated Ribes in his town at least as often as once a month, but if the number of Ribes was too great to accomplish this, an assistant might be employed. The superintendent was to visit each of the towns in his district as often as possible, checking up the work, aiding the local man whenever his advice was needed, receiving all local reports and bills, and in general making sure that the work was being well and properly done. Eighteen districts were accordingly established for the State, care being taken to keep them of such size that they could be properly covered by the superintendent without too long a period between visits to each of the towns.

As the superintendents should be men who had been trained

in this work, a search for such men was begun, even before the bill passed the Legislature, but so many were in demand for crew managers in other States that only ten could be obtained. Under these circumstances it was suggested that the district superintendents in charge of the gypsy moth work under the State Forester, eight in number, could take the other eight districts, and could in part, at least, utilize the organization already in existence for work in their districts.

No better solution of the difficulty being found this plan was adopted, though it was necessary, as a result, for the experienced superintendents to spend some time in training those who were not already familiar with the work, before going to their own districts.

When this had been accomplished the selection and training of the local men by the superintendents began, and by the middle of June local work was really getting under way. It was too late in the season, however, to do much work on the pines, and on June 25 orders were issued to turn attention to the currants.

Each local man was required to send to his superintendent each week a report showing what he had done, together with special card reports for each infection. These, together with bills for the work, were examined and checked by the superintendent from his personal knowledge of the work derived from visits to the place, and then forwarded to the head office.

Soon after the organization had been completed, labor troubles and difficulties due to war conditions began to appear. Some men were drafted; others enlisted; everywhere the withdrawal of so many men either for service or for work in factories made it difficult to find others to take their places, and it often became necessary to engage one man to work in several towns to meet this condition.

One of the conditions of co-operation by the United States Bureau of Plant Industry was that areas should be established in and around which all *Ribes* should be removed, whether diseased or not, in order to isolate pine growth and reduce the likelihood of its becoming diseased. This work was done in accordance with the resolution adopted at the Blister Rust Conference, Albany, N. Y., in November, 1916, which recommended "that Federal and State co-operative experiments be

carried on to determine the best methods, costs and results of eradicating Ribes and pines on a large as well as on a small scale and under varied conditions." The establishment of these areas was not undertaken until the general State work had been gotten under way, but it was begun August 1. One place selected was Warwick, which has a large and valuable pine growth, is not thickly settled, and where Ribes therefore would not be abundant; and also because one of the objections to taking Mount Grace, located in that town, as a State reservation was the danger that the pine on the proposed reservation might become infected by the rust. Then, too, the town is typical of conditions general along the northern border of the State, and it seemed desirable to be able to compare work there with similar work under differing conditions in other portions of the State.

A second eradication area was established covering the towns of Athol, Petersham, Barre and Dana. Here the value of the pines is probably greater than for any similar area elsewhere in the State. As the territory east of here is comparatively free from the disease for a long distance, and there is also little for some distance to the west, it seemed a promising place to attempt eradication work, both because of the value of the timber and because it might stand as a sort of protective belt across quite a part of the State between the western and eastern infected areas.

Later in the season an eradication area was also established covering the towns of Hanover, Hanson, Halifax, Pembroke, Marshfield and Duxbury. These towns have a large amount of valuable pine growth, few wild Ribes to complicate the situation, and conditions there differ so greatly from those in the other areas that it was thought wise to determine the effectiveness of this work under coastal plain conditions.

In addition to these areas it was also decided to go over those eradicated in 1916, in order to preserve what had already been accomplished.

To do this work rearrangements became necessary, and resulted in cutting down the time spent on the work in many of the towns. Many of the local men objected to working as little as one day per week, claiming that they must have regular

work for at least four or five days or they would be obliged to do something else. The committee recognized the validity of this claim, but circumstances relating to the co-operative agreement were such that little could be done, and work was reduced to a minimum in nearly two-thirds of the towns of the State in order to prosecute the eradication work.

On this plan, therefore, the work has proceeded since the 1st of August. Every town has been covered for cultivated Ribes at least once, and most of them several times, and all diseased plants taken out and destroyed. In addition, places where disease has appeared have been frequently revisited to make sure latent cases appearing subsequently should not escape. As a part of the inspection, a census of all cultivated currants and gooseberries has also been taken. Undoubtedly some have been overlooked, but from check counts made here and there it seems probable that 85 to 90 per cent of all the cultivated Ribes in the State have been enumerated. The knowledge thus obtained should be very useful for any later work, besides indicating quite definitely the importance of this industry in Massachusetts.

Results of the Work in 1917.

With a local worker in each town this year it was possible to learn much more fully of the condition of the towns than was the case with scouting crews in 1916. How near the local man came to inspecting every Ribes bush in the town is, of course, open to question, but certainly the towns were more thoroughly covered than heretofore. As a result of the work, the disease was found this year on Ribes in 56 towns where it was not discovered in 1916, while it was not found in 41 towns reported as having it in 1916. This means that slight infections last year in 56 towns were not found by scouting parties, or else were not present that year but developed this season. It also implies that in 41 towns the infected Ribes found and destroyed last year were only sporadic cases and did not reappear. Whether they existed long enough in those towns to infect the pines before their discovery and removal can only be learned by continued watching in those places until any such infections shall have had time to develop.

Outside of the eradication areas about 30,000 diseased Ribes

were found and destroyed. In cases where it was certain that other bushes close to these in the rows were diseased, though not showing it at that time, these too were usually destroyed. More of this should have been done, but it was thought best to err, if at all, on the conservative side.

Though, owing to the delay in beginning the work, pines were not examined to the extent Ribes were, some new infections were found, making a total of 30 more towns where diseased pines are now known, though in the majority of these cases only a tree or two were diseased. In Bridgewater, Pembroke, Charlemont, Rowe and Sandisfield, however, the conditions are rather serious.

On the whole, we may consider the situation in Massachusetts as very serious. Diseased Ribes have been found in 224 towns this year, and diseased pines in 72 towns either last year, this year or in both years.

At the annual conference of the blister rust managers of the various States and Canada, held November 12 to 13, 1917, the conditions and possibilities of the work under existing conditions were discussed. The question was raised whether the value of the pines is sufficiently great to justify total eradication of Ribes. On this point the general opinion of those present appeared to be that it was, except in areas where there is little pine growth, and commercial currant growing is prosecuted on a large scale. It was also conceded that if for any reason the work should be stopped at this time it could be taken up again later, and after the complete, continued elimination of Ribes in any region, pine growing could be resumed there.

Under present war conditions in Massachusetts, the necessity for keeping a large force on the work, and the expense of this, it is the opinion of the writer that it would probably be unwise at the present time to attempt anything like State-wide control of the disease, and that the best policy to pursue is to select the most valuable pine-growing areas in the State, make them eradication areas, and remove all Ribes, wild and cultivated, in and around these areas for a distance of at least one mile from the outside of the areas themselves. This should be done, if at all, for at least a five-year period, as only in this way can complete eradication of the Ribes be secured.

NURSERY INSPECTION SERVICE.

The nursery inspection has been conducted this year along the usual lines, with the exception of the fall inspection for gypsy and brown-tail moths, where the ruling of the Attorney-General, obtained in 1915, has been carried out. This was outlined fully in last year's report, which stated that all nurseries should be inspected before the fall shipping season for all insect pests and diseases except gypsy and brown-tail moths. The inspection for these latter pests would be made as soon as conditions permitted (in the larger nurseries this would be after the leaves had fallen), and until such inspection could be made each shipment of stock would be examined for these pests at the time of sale. It is realized that this has been an inconvenience to some of the nurserymen, especially where it has been impossible to have a resident inspector. However, on the whole, it is believed that the method has proved very satisfactory, and gives assurance that all stock leaving the nurseries is free from gypsy and brown-tail moths.

In many instances the surroundings are responsible for the conditions in the nursery, and often it is exceedingly difficult to prevent pests entering from adjoining property. This is especially true in the case of the gypsy moth, but the inspector has tried to remedy this nuisance as far as possible.

The inspection can readily be divided into three classes:—

1. The inspection of growing stock.
2. The inspection of stock imported into Massachusetts from abroad.
3. The inspection of stock brought in from other States.

The general condition of the nurseries was found to be excellent. The summer inspection disclosed a relatively small amount of scale, while the other insects and plant diseases which might be found prevalent at that time were comparatively few. During the spring a very careful inspection of the pines was made for the white pine blister rust and European pine shoot moth. Two outbreaks of the blister rust were discovered in nurseries which in previous years had shown no signs of the disease. With no remedy for this disease, and because of the apparent unrecognizable stage through which it might pass for several years, we are apt to encounter occasional

outbreaks as long as it is scattered throughout the State. Three years ago the pine shoot moth was quite common on stock imported from Holland, and in a few cases it had even obtained a foothold in this country. In view of this fact it is very gratifying to be able to state that this year only in isolated cases was any trace of the pest noticeable. It is hoped that by another year all evidence of the shoot moth will be eliminated.

The importations from Europe have been seriously affected this year by the war; yet several pests have been intercepted, any one of which, if allowed to develop unchecked in this country, might prove to be a serious menace, so that the importance attached to the work accomplished here cannot be over-estimated. A let-up on the foreign shipments has given the department a greater opportunity to examine stock received from other States, which in most cases has been of a superior quality to that brought in during previous years. However, a few shipments were found to be below the Massachusetts standard, and in these cases the stock was either returned to the consignor or destroyed.

Nurserymen should familiarize themselves with the requirements of the States into which they wish to ship stock. Some States require certificate of fumigation, some class strawberry plants as nursery stock; license to sell stock in several States is necessary; in many cases certificates of inspection of the State where stock is grown must be filed in the State of destination. At the present time five-leaved pines from Massachusetts can be shipped only into Connecticut, New Hampshire and Rhode Island.

The inspection service has always been somewhat handicapped in its ability to obtain trained men. The majority of the inspectors have been men who were just out of, or had still to complete, their course in a college or university, and who were willing to leave their studies temporarily in order to obtain financial aid. It is men of this age who are now being called by the government, and already ten who were available as inspectors have offered their services. This will be felt very keenly during the coming year, but a perfect understanding between the nurserymen and officials in carrying out the inspection, and a desire for co-operation on the part of each, will greatly facilitate the inspection.

Inspection of nursery stock from abroad has naturally taken

less time this year than heretofore, only 219 shipments with a total of 1,067 cases having been received. Their distribution is shown by the following table:—

Imported Nursery Stock, December 1, 1916, to December 1, 1917.

	Number of Shipments.	Number of Cases.
England,	68	257
Holland,	39	185
Scotland,	33	44
France,	21	84
Ireland,	16	63
Japan,	15	287
Colombia,	7	69
Belgium,	6	47
Brazil,	5	17
Trinidad, W. I.,	3	3
Bermuda,	2	2
Costa Rica,	1	1
Denmark,	1	2
Italy,	1	1
Venezuela,	1	5
Total,	219	1,067

In my last report, in addition to the list of insects and diseases actually found on shipments, it was stated that 59 shipments (263 cases) had arrived too recently to be reported on. They may therefore be given here to complete last year's report.

Insects.

Times reported	NAME.	Found on —	Country.
30	Gracilaria zachrysa Mey. (leaf miner), .	Azalea,	Belgium.
2	Peronca schalleriana L. (leaf webber), .	Azalea,	Belgium.
6	Aspidiotus hederæ Vall. (ivy scale), . .	Palms,	Belgium.
2	Chrysomphalus aonidum (L.) (scale insect),	Palms,	Belgium.
1	Lepidosaphes ulmi L. (oyster shell scale),	Box,	Holland.
1	Aeronycta rumicis L. (noctuid moth), .	Azalea,	Belgium.
1	Apanteles sp. (hymenopterous parasite), .	Cocoon on azalea,	Belgium.

Diseases.

Times reported.	NAME.	Found on —	Country.
1	Mildew,	Box,	Holland.
16	Exobasidium azaleæ,	Azalea,	Belgium, Holland.
1	Myxomycete,	Azalea,	Belgium.
1	Leaf spot, ¹	Aucuba,	Holland.

¹ The pathologist of the Federal Horticultural Board reports this was due to physiological causes and not to a fungus. Apparently it is not injurious.

The insects found on shipments during 1915-16 which were sent to specialists for identification, and reports from whom were not received in time to include in the last report, are also now given. It should be stated that ten specimens from 1915-16 are still in the hands of specialists.

Insects.

NAME.	Host.	Country.
<i>Lepidoptera: —</i>		
<i>Acronycta rumicis</i> L. (noctuid moth),	Cornus,	France.
<i>Hoplitis milhauseri</i> Fab.,	Oak,	France.
<i>Lithocolletes pomifoliella</i> Zeller (leaf miner), .	<i>Pyrus malus floribunda</i> , .	Holland.
<i>Lycophotia margaritosa</i> Harr.,	<i>Buxus</i> ,	Holland.
<i>Malacosoma neustria</i> L.,	<i>Malus</i> ,	Holland.
<i>Olethreutes</i> sp.,	<i>Taxus</i> ,	Holland.
<i>Tortrix</i> sp.,	<i>Taxus</i> ,	Holland.
<i>Coleoptera: —</i>		
<i>Adalia humeralis</i> Say. (lady beetle),	<i>Thuya</i> ,	Holland.
<i>Agelastica alni</i> L. (leaf-feeding beetle),	Box,	Holland.
<i>Aphodius inpuinatus</i> Hbst. (dung beetle), . . .	Miscellaneous shipments, .	Holland.
<i>Carabus granulatus</i> L. (ground beetle), . . .	<i>Retinospora</i> ,	Holland.
<i>Carabus nemoralis</i> Müller (ground beetle), . .	Box, rose,	Holland.
<i>Clivina collaris</i> Herbst (ground beetle), . . .	<i>Rhododendron</i> ,	Holland.
<i>Helops levioctostriatus</i> (darkling beetle), . .	<i>Azalea</i> ,	Belgium.
<i>Pterostichus vulgaris</i> L. (ground beetle), . .	<i>Rhododendron</i> ,	Holland.
<i>Diptera: —</i>		
<i>Compsilura concinnata</i> Meigen (Dipterous parasite), .	Pupa on <i>rhododendron</i> , .	Holland.
<i>Stomoxys calcitrans</i> L. (stable fly),	<i>Azalea</i> ,	Belgium.

The insects and diseases found on shipments between December 1, 1916, and November 30, 1917, are as follows:—

Insects.

Times reported.	NAME.	Found on —	Country.
1	<i>Blatta orientalis</i> (L.) (cockroach), .	Juniperus,	England.
1	<i>Carabus nemoralis</i> Müller (ground beetle), .	Rhododendron, . .	England.
1	Elateridæ (fragments) (click beetle), .	Apricot,	Scotland.
1	Elateridæ (wireworm),	Juniperus,	Japan.
3	<i>Diaspis boisduvalii</i> Sign,	Orchids,	England, Costa Rica, Colombia.
2	<i>Erytoma</i> sp.,	Orchids,	Colombia.
1	Euplexoptera (fragments) (earwig), .	Rose,	Holland.
2	<i>Gracilaria zachrysa</i> Meyrick (leaf miner),	Azalea,	Belgium.
1	<i>Lecanium persicæ</i> Fabr. (soft scale), .	Nectarine, Fontanesia phillyræoides,	England, France.
2	Lepidopterous pupæ (broken),	Lilac, Holly,	Japan, Holland.
1	<i>Lepidosaphes ulmi</i> L. (oyster shell scale),	Apple,	England.
1	Mantidæ (eggs),	Torreya,	Japan.
1	<i>Notolophus antiqua</i> (L.) (European tussock moth), .	Rose,	Holland.
1	<i>Parlatoria proteus</i> (Curt.) (scale insect),	Orchids,	England.
1	<i>Porthesia similis</i> (Fuessl.) (larva), .	Apricot,	Scotland.
2	Psychidæ (empty bags) (bagworm), .	Wistaria,	Japan.
1	<i>Saperda populnea</i> L. (borer),	Silver poplar,	France.
2	Acarina (eggs),	Laburnum, apple,	Holland, England.

Diseases.

2	<i>Bacterium tumefaciens</i> (crown gall), .	<i>Syringa persica</i> , var. <i>alba</i> ,	France.
1	<i>Exobasidium azaleæ</i> ,	Azalea,	Belgium.
1	<i>Gymnosporangium</i> ,	Juniperus,	France.
1	<i>Nectria</i> sp.,	Apricot,	Scotland.

Unidentified Insects.

1	Cocoon (dead),	Peach,	Scotland.
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Only 109 licenses to nursery agents have been issued during the year. Either less business of this kind is being done than was formerly the case, or more agents are evading the law.

FINANCIAL STATEMENT.

Blister Rust.

Appropriation,	.	.	.	.	.	.	.	.	.	.	.	\$50,000	00
Expenses,	.	.	.	.	.	.	.	.	.	.	.	26,576	18

Nursery Inspection.

Appropriation,	.	.	.	.	.	.	.	.	.	.	.	\$14,000	00
Compensation of inspectors,	.	.	.	.	.	.	.	.	.	.	.	7,052	72
Traveling and necessary expenses,	.	.	.	.	.	.	.	.	.	.	.	6,593	85
Supplies (postage, printing, etc.),	.	.	.	.	.	.	.	.	.	.	.	224	12
Clerical services,	.	.	.	.	.	.	.	.	.	.	.	121	75

The time has come when the entire attention of the chief inspector should be devoted to the duties of the inspection service. This I am unable to do, and I therefore respectfully present my resignation as State Nursery Inspector, to take effect December 15, 1917.

To express fully my appreciation of the co-operation and assistance received by me during the sixteen years of my service, both from the nurserymen of Massachusetts and from the three secretaries of the Board of Agriculture under whom I have served, would be impossible; without this I could have accomplished little or nothing.

Respectfully submitted,

H. T. FERNALD,
State Nursery Inspector.

AMHERST, December 12, 1917.



Nesting box occupied by a hooded merganser at Tacoma, Washington; the first case on record. (See page 26.) Photograph by J. H. Bowles, who put up the box. Such boxes put up in similar places in Massachusetts attract wood ducks.

TENTH ANNUAL REPORT

OF THE

STATE ORNITHOLOGIST.

PRESENTED TO THE BOARD AND ACCEPTED,
DECEMBER 4, 1917.

TENTH ANNUAL REPORT OF THE STATE ORNITHOLOGIST.

To the Honorable Massachusetts State Board of Agriculture.

GENTLEMEN:— Much of the work of the year has consisted of collecting data and gathering material for publications, but owing to the war demand for literature on planting, cultivation and storing garden and farm products there has been little money available for publications on economic ornithology. Two brief papers have been prepared and printed, and three papers have been reprinted. An arbor and bird day leaflet was prepared in collaboration with the secretary of the Massachusetts Forestry Association, and was distributed before arbor day by the State Board of Education to the rural schools of the Commonwealth. This leaflet was published by the Massachusetts Forestry Association, and the colored plates were provided by the Board of Agriculture. The Board also published a circular on the storage of fruits and vegetables, written by the State Ornithologist at a time when no one else connected with the Board could find time to write it. The titles of these publications follow:—

PUBLICATIONS OF THE YEAR.

Massachusetts Forestry Association. Arbor and Bird Day. Edward Howe Forbush, State Ornithologist, and Harris A. Reynolds, Secretary, Massachusetts Forestry Association.

Circular No. 75, Common Storage of Fruits and Vegetables. Edward Howe Forbush.

Reprints:—

Ninth Annual Report of the State Ornithologist.

Bird Houses and Nesting Boxes, Circular No. 47.

Owl Friends, Nature Leaflet No. 14.

Material has been collected for a bulletin on the means of attracting birds and increasing their numbers, but this could not be published in 1917.

LECTURES AND LECTURERS.

The demand for lectures on birds has been somewhat less than in the past, probably because war activities have largely occupied the attention of many organizations. The following list includes the names and addresses of lecturers on birds in this State who are in communication with this office.

Mrs. Harriet Upham Goode, Box 455, Sharon, Massachusetts. Local Birds and their Habits; Experiences in Making and Maintaining a Bird Sanctuary; The Wonderful Story of Migration. Illustrated by colored charts and lantern slides.

Raymond J. Gregory, Princeton, Massachusetts, Chairman, State Grange Committee on Wild Birds. New England Birds.

Mrs. E. O. Marshall, New Salem, Massachusetts, Secretary, State Grange Committee on Wild Birds. Many Phases of Bird Protection and Bird Life.

Dr. John B. May, Cohasset, Massachusetts. Our Neighbors the Birds; With the Birds at Winnetaska; Some Humble Orchids. Illustrated with colored bird portraits or lantern slides.

Dr. Eleanor Mellen (Mrs. George H. Mellen), 291 Lake Avenue, Newton Highlands, Massachusetts, member of the State Grange Bird Committee. Economic Value of Birds; Attracting Birds about the Home; How to Study Birds; Author of Practical Methods of Attracting Wild Birds. Birds in War-time.

Winthrop Packard, Canton, Massachusetts, Secretary, Massachusetts Audubon Society. Bird Music and Bird Welfare. Illustrated by lantern slides.

Walter K. Putney, Superintendent of Schools, Chelmsford, Massachusetts. Butterflies, Birds and People; Birds and their Value to all Mankind; Bird Lore and Curious Old-time Beliefs. Illustrated by lantern slides.

Miss Ruth E. Rouillard, 66 Newbury Street, Boston, Massachusetts. Our Common Birds and How we may Protect Them. Illustrated by lantern slides.

Professor Dallas Lore Sharp, Hingham, Massachusetts. The Wild Life of Three-Arch Rocks. Illustrated by lantern slides.

Horace Taylor, 294 Walnut Street, Brookline, Massachusetts. Life and Song of Native Birds; Evolution of our Game-birds. Illustrated by lantern slides. Bird-Friends in Colored Chalk (rapid drawing).

Mrs. Henry F. Whitecomb, Amherst, Massachusetts. Garden Planning and Planting to attract Wild Birds; Birds' Migrations; Economic and Artistic Value of Birds. Illustrated by stuffed birds, skins, and many colored plates and maps.

LEGISLATION.

All the recommendations contained in my last annual report were approved and adopted by the Board, and bills embodying these suggestions were presented to the Legislature. House No. 170 removed protection from the starling; House No. 172 provided for popular lectures on birds in the schools of the State and for a State supervisor of bird study; House No. 173 authorized arbor and bird day exercises in the schools of the Commonwealth, making arbor day also bird day; House No. 174 provided for a report on the birds of the Commonwealth in two volumes with colored plates, and carried an appropriation for drawing; House No. 175 provided for an assistant to the State Ornithologist, and gave him the power to appoint special observers to study the distribution of the birds of the Commonwealth. This bill was passed with some amendments as chapter 75 of the General Acts of 1917, but instead of appropriating \$1,200 for an assistant it allowed only \$1,000. This was not enough to secure the employment of a trained economic ornithologist. Accordingly Mrs. Alice B. Harrington, an experienced stenographer having some knowledge of birds, was employed as secretary to the ornithologist. House No. 173, designating arbor day, the last Saturday in April, as bird day also, and authorizing its observance in the schools of the Commonwealth on the Friday preceding, was enacted. It also allowed the State Board of Agriculture to prepare a leaflet annually for distribution in the rural schools of the Commonwealth, but provided no money for that purpose. All the other measures recommended by the State Ornithologist, except House No. 172, were reported favorably by the legislative committee on agriculture, but shortly afterward, war with Germany being imminent, immense war appropriations were made by the Legislature and, therefore, House Nos. 172 and 174 failed of passage. An act was passed prohibiting the bringing of cats to the island of Muskeget or the possession of cats on the island (chapter 40). This law was enacted to protect sea birds on the island, which had been decimated by cats. A close season on waterfowl in certain southeastern counties of the State was made from January 16 to September 30 (chapter 73), but this act by its

terms does not permit hunting in violation of Federal regulations, and any hunting of wild fowl after January 1 would constitute a violation of these regulations. An act closing the season on bobwhites or quail for five years in Middlesex and Hampden counties was enacted (chapter 157). Another change was made in the season on upland game from October to November, except in Berkshire, Franklin, Hampden and Hampshire counties, and providing in these counties that the open season on woodcock shall be between October 20 and November 30 (chapter 170).

In the last annual report of the State Ornithologist a brief history was given of the legislation enacted by Congress in connection with the Federal protection of migratory birds. At that time the Federal law which provided for the conservation of these birds had been brought to the attention of the Supreme Court of the United States on the question of its constitutionality through an appealed case, action on which had been postponed. No further action on the case has been taken by the court. In the meantime, the treaty with Great Britain having been ratified under which migratory birds are to be protected in the United States and Canada, the Canadian Parliament has passed an enabling act putting the treaty into effect in Canada, but the Congress of the United States has not yet enacted such a statute. At the last session of Congress identical enabling bills were introduced in both the House and the Senate, which were known as the Federal Migratory Bird Treaty Act. This act was passed in the Senate, but failed in the House, and must come up again at the next session of Congress.

GREAT BRITAIN PROHIBITS THE IMPORTATION OF PLUMAGE DURING THE WAR.

It has been illegal for years to export the plumage of wild birds from colonies of Great Britain, but, nevertheless, large quantities of feathers have been smuggled out of the colonies to England by people most of whom are believed to work in the interest of German feather dealers in England. A large part of this plumage formerly was "manufactured" in Germany. The importation of these feathers into the British Isles during the war was prohibited early in 1917 by an order in Council. Mr.

James Buckland of London, to whose well-directed efforts in agitating the matter this interdiction was mainly due, writes me that there is good reason to believe that after the war it will be made permanent. If England will thus follow the lead of the United States, a long step will have been taken toward the destruction of a traffic which tends to the extermination of many of the rarer and more beautiful birds of the world. Undoubtedly ways and means will be found to evade the enforcement of this prohibition. Feathers have been smuggled into the United States notwithstanding the law forbidding their importation, but the traffic is now illegal, and most of it can be prevented if the authorities are vigilant.

FIELD WORK OF THE YEAR.

For various reasons much work in the field was required in 1917.

Bird Days.

The Board of Agriculture joined with the Massachusetts State Grange Patrons of Husbandry and the Massachusetts Audubon Society in celebrating bird field days at Norton on May 5, at Amherst on May 19 and at Dudley on June 12. At all these meetings there were exhibitions of bird houses and feeding appliances and addresses on pertinent subjects. There were prize contests open to children and adults, and other exercises. At Dudley there was a trip to the bird reservation maintained on the estate of Hon. Edgar S. Hill. At Amherst the exercises were held at the Massachusetts Agricultural College, where there was an address by President Butterfield in the afternoon, and some excellent moving pictures from the National Association of Audubon Societies, exhibited by Rev. Herbert K. Job. These meetings, which have now been held for three years in various parts of the State, continue to create popular interest.

The Heath Hen.

The great fire that swept the heath hen reservation on Martha's Vineyard in May, 1916, menaced the existence of the species. Just previous to that time I had completed a census of the birds, and was satisfied that there were at least 800 on

the island. Mr. William Day, the superintendent in charge of the reservation, believed that there were about 2,000. After the fire the birds were noticeably fewer. The cover was destroyed, and the sprouts which grew after the fire produced no acorns, thus reducing the food. There were no leaves on the ground where the birds nest. It was burnt black and swept bare, and both old and young were fully exposed to the attacks of their enemies, which were increased in numbers during the fall and winter by a flight of goshawks, which are enormously destructive to grouse and other birds. In April, 1917, during a survey of the island I could account for only 126 heath hens. The number of males was excessive, and it was apparent that there were less than fifty pairs of these birds left on the island. During the breeding season of 1917 the weather was cold, rainy and unfavorable for the rearing of young. Again, recently, there were indications that another flight of goshawks was on the way from the north. The condition of the heath hen now is precarious, and I have reported to the Commissioners on Fisheries and Game that the species should have the best of care at once.

Food of Night Herons.

Chairman William C. Adams of the Commissioners on Fisheries and Game suggested in 1916 that it would be well to examine the food of the night herons of the State, as certain fishermen believed that these birds were destructive to food fishes, and hoped that the law protecting them might be repealed. Examination was made of the food of old and young in night heronries on Cape Cod and Martha's Vineyard. The young were very accommodating in presenting the contents of their stomachs to the investigator, without much persuasion. Food elements found consisted mainly of fishes not ordinarily considered of much value as human food. Alewives constituted the greater proportion. On Cape Cod the food consisted largely of squids, which seemed to be very numerous during the summer. These were probably obtained about the fish weirs along the coast. In one case the remains of an eel were found, and in another the remains of a pickerel. This examination was conducted through June and July.



Night heronry in hardwood swamp.



Night heronry in pitch pines on hilltop.
(Original photographs.)

Sea bird Colonies.

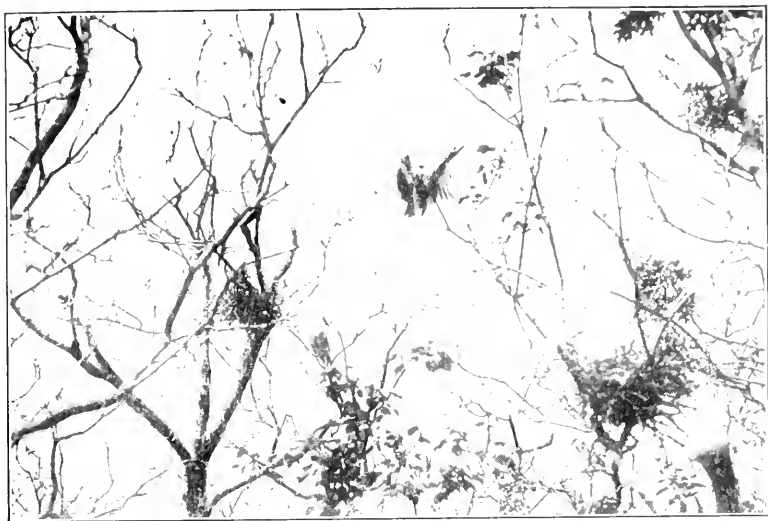
Many of the colonies of sea birds along the coast were visited and inspected during June, July and August. It was found that the number of arctic and roseate terns breeding along our coast had increased within the past ten years. The numbers of common or Wilson's terns apparently have not increased, and the least tern seems in danger of extirpation. Nearly all the colonies of this little species along the south shore of Martha's Vineyard and at the west end of the island have either disappeared or are represented by a very few pairs of birds. Few seem to be nesting on Monomoy. There is one small new colony on the mainland, but this is in a situation where it may be extirpated, as it is easily accessible to people, cats and skunks. The least tern nests mainly on the outer beaches, almost always opposite some inner bay or pond. Such locations are visited more and more each year by "summer people," who disturb and molest the birds. Summer residents also leave numbers of cats to wander on the beaches. Cats are very destructive to the terns and their young. The nests and young birds are always within reach of the highest storm tides, and whenever a great storm occurs during the breeding season they are likely to be swept away. Probably this species can be saved only by the appointment of wardens to watch these colonies during the breeding season, and to protect them from intrusion and the attacks of their enemies. Colonies of the larger terns on the beach near Chatham have been decimated by skunks and cats, and will require special protection, otherwise they may be unable to maintain themselves. Piping plover are increasing.

The Starling.

Complaints have been received that the starling destroys apples, pears and peaches by pecking small holes in the fruit on the tree, which then decays; also many observers have reported that the starling in autumn collects in large flocks, sometimes accompanied by blackbirds, and attacks corn, but no evidence has been received at this office until this year that starlings had rooted up seed corn after it had sprouted. Mrs. Margaret E. P. Hamlin wrote from Amherst on March 26,

1917, that in 1916 Mr. Frank Williams of that town had about half an acre of field corn which had sprouted and had appeared above the ground. He passed the field early one morning and saw a flock of twelve birds, which he believed to be starlings, at work upon it. They drove their bills down beside the green shoot, brought up the kernel and ate it. On being shown a starling he recognized it as the species which ate his corn. These birds are said to have destroyed nearly all the corn on that half acre. Mrs. Hamlin said that a few days later Mr. Patrick Sullivan lost in the same way a large part of his corn and some peas; also the birds dug for and ate out the hearts of his squash and pumpkin seeds, so that he lost that crop. Similar damage is reported from some farms in North Hadley. Mr. Sullivan in reply to my queries corroborates this statement, but says that only the center of the kernel was taken. Evidently he means the soft part containing the germ. He asserts that he personally saw the birds dig up the corn, going from one hill to another and eating out the center of the kernels. He also corroborates the statement regarding the squash and pumpkin seeds that were planted at the same time. He tried to scare the birds away by using small strips of cloth tied upon strings, but this did not frighten them. He asserts that peas were pulled, but did not notice any damage to other plants. We cannot say positively in these cases that the bird was absolutely identified as the starling, as no ornithologist saw the birds in the act. Blackbirds have been accused of similar habits. Dr. E. W. Nelson, chief of the Biological Survey, United States Department of Agriculture, informs me that the Survey has had similar complaints regarding the starling, but on investigation the biologists have found the depredators to be red-winged blackbirds. Any one who has observed such habits will confer a favor by communicating with this office.

A New Means of breaking up Roosting Places. — The starling has caused some trouble by roosting in large numbers in various localities in towns and cities. On August 24 Mr. William C. Adams, chairman of the Commissioners on Fisheries and Game, referred to me a letter from Hon. John J. White, mayor of Holyoke, in which the mayor asserted that in a section of the city covering two city blocks thousands of "blackbirds" had



Night herons and nests in heronry.



Young night heron in nest.
(Original photographs.)

settled upon the trees. This began about three years ago, and the number constantly increased. The noise and filth that they made troubled the people who lived in that section, and the mayor desired to know how the birds might be driven away. It was believed that a large proportion of these birds were starlings. Some recommendations were made to the mayor, but the method finally adopted was this: a thick pad, to protect the bark from injury, was placed on each tree by a man from the forestry department, after which the pad was struck hard with a sledge hammer. This was continued night after night until the birds left the place.

Starling destroys Gypsy and Brown-tail Caterpillars. — Those who regard the starling as a desirable bird will be interested to know that it has been reported as an enemy to the gypsy moth and the brown-tail moth. Mrs. J. M. Beaman of Westborough writes that her sons noted starlings flying across Hocomocko Pond "with all they could carry of these gypsy caterpillars in their mouths." Mr. Winthrop Packard says Mrs. Henry H. Seaver of Templeton watched starlings bringing food to their young in a hole in the side of the house near the kitchen window. She said that they brought fifty brown-tail caterpillars in succession one morning, and that she also saw them bring gypsy caterpillars. This is hearsay testimony, but it accords with recorded habits of this species in Germany.

Its Distribution extending. — Many letters have been received regarding the distribution of the starling, which show that having extended over New York, New England and the middle States it is now moving on the south. Miss Katherine P. Stuart of Alexandria, Virginia, writes that during the winter of 1916-17 there were thousands of starlings throughout that region, and that in the spring of 1917 a pair was found nesting not far from her home. This is the first pair reported to me as nesting in Virginia.

Pheasants.

Many complaints have been received from farmers regarding the destruction of their crops by pheasants. Very serious damage was done to sweet corn, as the pheasant digs up or pulls up the early planted corn, making replanting necessary, and so

delaying the crop that the farmer gets a much reduced price for his product. Mr. Leslie A. Bull of Lexington, who supplies one of the large restaurants in Boston with sweet corn, asserts that the pheasants ruined his contract for the year, as he was obliged to plant four times. He put up scarecrows and even poisoned his seed corn, but his farming operations were absolutely brought to a standstill by the depredations of the pheasants. Again, pheasants have been reported as destructive to potatoes and peas. Mr. W. F. Mansfield of Medford, Massachusetts, says that some of his potato rows were dug up by these birds for a distance of 6 or 8 feet. The tubers were mostly pecked a little, but in some cases all but the skin was eaten. Several years ago my neighbor at Wareham, Mr. Alden Maxim, lost about 2 bushels of potatoes, and reported that he actually saw pheasants eat them. I was unable to verify this by my own observations, and have not heard such a complaint again until this year. Any definite information on this subject will be gratefully received by this office. This season, for the first time, complaints were received that pheasants were stripping the buds from fruit trees. Mr. George S. Knapp of Groton wrote to Secretary Wheeler, of the State Board of Agriculture, on February 24, 1917, saying that pheasants had stripped practically all the buds from some apple trees, except the terminal ones on some slim perpendicular shoots out of their reach. I requested Mr. William P. Wharton, who lives in Groton, to make some observations in the matter, and he did so, but failed to find the pheasants actually destroying the buds, although he saw pheasants near the orchard. Mr. Knapp asserts that he saw the birds at work on the buds many times during the season. He says that the pheasants were seen budding the trees when the ground was well covered with snow, but when it was partly bare they fed more on seeds and frozen apples. He avers that some of the neighbors have had similar trouble. Mr. E. A. Furbush of West Acton wrote on March 23 that pheasants were then destroying buds on his apple trees. Any one who has actually observed this habit will confer a favor by communicating the facts to me at the State Board of Agriculture, Room 136, State House, Boston, Massachusetts.

Under the law a farmer has the right to shoot any pheasant

that is actually doing damage. Section 2 of chapter 401 of the Acts of 1914 provides that a person may capture, pursue, wound or kill upon land owned or occupied by him any pheasant which he finds in the act of injuring any crop on cultivated land, and he may authorize a member of his family or person permanently employed by him on such land to act in his place under the same circumstances, but he must report the killing within twenty-four hours to the Commissioners on Fisheries and Game, stating the time, place and number of pheasants captured, wounded or killed. If he does not report he is liable to a fine not exceeding \$50. Evidently it is imperative for a man to protect his crops when pheasants are doing them serious injury, but it should not be forgotten that the pheasant is very destructive to many injurious insects. Dr. A. M. Gould writes from Malden that he counted 17 pheasants and 11 crows eating grasshoppers on his place, and he believes that the pheasant is a valuable bird because of the help that it gives to the farmer in decimating destructive insects.

Destruction of Birds by the Elements in the Spring of 1917.

During April, May and June the weather most of the time was unseasonable. Early in the season there were snowstorms; later there were widespread frosts and snow on the higher lands, and during most of the time there were either cold rains or cloudy, foggy and cool days. Mr. John W. Smith, meteorologist at the Boston office of the Weather Bureau, has kindly furnished me with the climatological data of the New England section for April, May and June. These reports show that the month of April was somewhat colder than usual, and that the amount of sunshine was less than ordinarily obtains in that month. Cold northeast winds prevailed. On the 9th from 3 to 12 inches of snow fell on the coast. Apparently the snowfall reached its maximum in southeastern Massachusetts, where on Cape Cod and Martha's Vineyard it fell very heavily, and deep drifts remained for many days. The precipitation for the month was greatest in Massachusetts and Rhode Island. While the storm on the 9th may have been destructive to early tree swallows, and possibly even to some bluebirds in the southeastern counties of Massachusetts, the month as a whole was not much

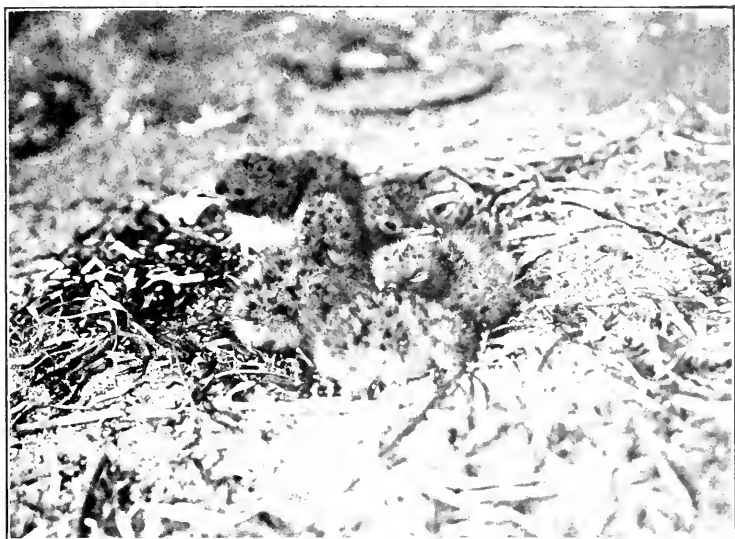
colder than usual. The migrations of certain birds were delayed somewhat during the latter part of the month.

May was abnormally cold, the temperature being the lowest since the Weather Bureau was established. The average temperature for New England was 47.8. In a record kept at Amherst, Massachusetts, extending back to 1837, no other May of so low a temperature is recorded. The amount of sunshine was far below the average. The rainfall was nearly normal, but the snowfall was the greatest for May in the Weather Bureau records for this section. The average temperature of New England for April and May was the lowest for these months within the past thirty years. The weather report asserts that the low temperature and lack of sunshine retarded vegetation so that the season at the close of May was from three to four weeks later than normal. Some observers believed it to be the latest ever known. The low temperature resulted in part from north and northeast winds such as prevailed in April. The precipitation for May was not excessive, but drizzly or foggy weather was more prevalent than heavy rains.

The average temperature for June was below normal and the rainfall heavier, with one exception, than that of any June in the records of the Weather Bureau in New England. The exception was June, 1903, when thousands of young birds were destroyed by cold and storms,¹ but the prevailing winds of this month in 1917 were southwest, which kept the temperature nearly normal much of the time. Early July brought cloudy, foggy and rainy days, particularly along the coast, after which the season became more nearly normal. The following entry from my notebook, dated May 31, at Westborough, shows the impression produced by the weather:—

All the spring has been cold and drear with only a few exceptional warm days. Rainy conditions, cold northwest to northeast winds have prevailed, and in all my experience I can recall but one other spring like it. Even now many trees in the woods show only swelling buds or tiny leaflets. Yesterday, Memorial Day, people could not find wild flowers to decorate the graves, and there were no lilacs, columbines, lady's slippers, buttercups, daisies or wild geraniums. The only one of the large wild flowers that I found was jack-in-the-pulpit, and most of them were not well devel-

¹ Special report on the Destruction of Birds by the Elements in 1903 and 1904, Annual Report of the Massachusetts State Board of Agriculture, 1904, pp. 429-543.



Five young common terns in nest.



Fully fledged young night heron using head as hook to climb with.
(Original photographs.)

oped. Shadbushes are still in full bloom. Some flowers of late April and early May are yet in blossom. Dandelions, Houstonias and five-fingers spangle the fields. Some violets are blossoming and a very few polygalas. A few wild cherries are in bloom, and some apple trees are just beginning to flower. The migration of warblers is still going on. The birds are scattered through the woods and orchards, but I have not yet seen a blackpoll warbler, though the migration season seems to have passed its height.

The following notes were taken June 2 at Mattapoisset: —

Many of the oaks and other woodland trees seem just beginning to put out leaves, while yesterday at Dudley and Webster there were many deciduous woods where there was not foliage enough to hide the limbs. This was true also in Bristol County and Pawtucket, Rhode Island, New Bedford and Wareham, Massachusetts. Birches showed considerable leafage, but some of the elms were just beginning to open their buds, and the swamp maples were almost bare, while many oaks and chestnuts still appeared as bare as in winter. On the whole, the foliage appeared hardly as far advanced as it often does on May 15.

On June 5 the Lasell students were not able to have their daisy chain, as there were no flowers, and it was not until the middle of June that the wild flowers appeared as they ordinarily do in the latter part of May. There was a similar delay in the appearance of insects. Eggs of insects failed to hatch at their usual time, but apparently the cold weather did not destroy them. With the exception of tent caterpillars and a few others, insects appeared in their full, normal numbers later in the season. A few birds appeared earlier than normally, but the main flight of insect-eating birds came a week or ten days later than usual. Even then the birds came too soon, for their insect food was not ready for them. Many of the early swallows and martins apparently succumbed to the cold storms which came after the birds arrived. Several observers report finding dead martins and swallows in nesting boxes. The destruction of martins and swallows appeared to be greatest in the southeasterly parts of the State, on Cape Cod and contiguous to it, where storms with high winds prevailed. In some localities practically all the tree swallows disappeared, as well as the martins. This was not always the case, however. At Wareham the swallows nesting in my experimental boxes were decimated more or less by the early storms. Three were found dead in the boxes, and the

colony was much reduced in numbers, but later other birds came and nested in more than half of the boxes. Late in May reports began to come in that many warblers and other birds had been picked up dead or dying.

For the purpose of getting information from all parts of the State regarding the effect of the season on birds, hundreds of letters were sent out to people who were interested in the subject, and replies were received from every county in the State. These replies indicated that very many birds had died of starvation or cold in the latter weeks of May in every part of the State except the southeastern portion, where, although birds apparently were hard pushed to find sufficient sustenance, there is no evidence that any great number succumbed to the adverse conditions. On Martha's Vineyard and Nantucket there was a considerable supply of insect food, and the temperatures were not so low as in other parts of the State. Such birds as perished there and on Cape Cod were mostly victims of the severe wind and rain or snow storms, or of high storm tides.

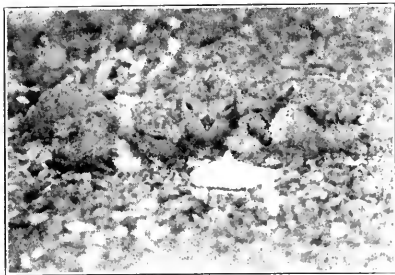
In going over the reports from various correspondents the first fact almost universally observed was that of an unusual flight of birds, particularly insect-eating species, such as warblers. Only a very few observers had not noticed this. The next fact noted was that the birds were much less shy than usual, and that they were seen more about houses, in villages and closer to the ground than in ordinary seasons. The warblers were so weak and so preoccupied in seeking food that many of them could almost be taken by hand, and as they grew weaker some were so caught. Mr. Harold W. Copeland reports that in Bridgewater a redstart flew into a room and alighted on a man's shoulder. Miss Dorothy S. McBurney of Stockbridge reports a warbler as flying to a child's shoulder, after its mate had been killed by a cat, and refusing to leave its warm perch. Many people did not recognize this lack of shyness and the tendency of the birds to cluster about buildings as a sign of suffering or starvation until it was seen that the birds were becoming so weak that they could be captured by hand, and that many of them were dying. Although most observers believed that the flight of birds was very much greater than usual, this seeming abundance may have been largely due to the fact that the wood

birds sought the neighborhood of man for the sake of food. During part of the period of lowest temperature in May the hills and mountains in western Massachusetts were covered with snow; also the trees had no leaves and few insects, and the insect-eating birds could find little food there. They therefore crowded into the valleys where people dwelt. They came to the ground first in the search for insects, because some of the small shrubs leaf out before the trees, and many birds feed largely on leaf-eating insects. Therefore the little bushes with their small leaves held out a hope of food. Birds came to the villages because many of the shade trees leaf out before the trees in the woods, and therefore provide shelter and possibly insects earlier. They came to the ground particularly on the cool mornings because there at such times they were more likely to find insects or other animal food (earthworms) than in the trees. They visited plowed lands, stables, houses and dwellings generally for the same reason. They entered buildings for shelter. About houses, barns, stables and manure heaps they found a few maggots, flies, other insects and spiders. They fluttered up the sides of houses seeking flies on the clapboards. Where windows were open they even went into houses and searched plants for plant lice and other insects. Some warblers, sparrows and thrushes came to chicken yards where cheese curds and chick feed had been fed to the chicks. Warblers and tanagers were very commonly seen on plowed grounds, where they followed the plowman to search for the worms, grubs and insects that were thrown up by the plow. Farmers spreading manure in their fields were followed by flocks of warblers looking for worms, maggots, grubs and other forms of animal life found in the manure. It was an almost unheard-of sight to see bright male scarlet tanagers, beautiful redstarts and Blackburnian and magnolia warblers in numbers on plowed lands and manure heaps.

Mr. Clayton E. Stone of Leominster writes that birds even came and fed on maggots or grubs in forkfuls of manure passed out to them, and alighted for this purpose on the full fork held in his hands. Warblers and tanagers were seen in strawberry beds; also on lawns, where they searched among the grass roots for seeds, earthworms and insects. Numbers of birds sought

shelter in hedges near dwellings and under the banks of streams. In one case, reported by Mrs. F. B. Spalter of Winchendon, a mill pond was drained off and the uncovered shores of the pond were flecked with bright tanagers searching for animal food. Many birds sought refuge from the storms in barns and sheds. Mr. Glenn Boyle, who found twenty dead warblers about the buildings of his home in Gill, half of which were redstarts, reports that one warbler crept under the side of a reclining cow in the barn for warmth, while another alighted on a horse's ear. In other cases birds sought warmth by alighting on farm animals. Swallows sought window stools and sheltered places about or inside buildings. But all of these various expedients failed to protect many of them from the severity of the storms or to nourish them sufficiently. Reports soon came in that the school children were finding dead birds on the roads, about the houses and lawns, and were bringing them to school. Many teachers reported long lists of birds brought in. The majority of these were warblers, but sparrows, even, and other species were picked up dead; others were taken in so weak a condition that they finally died, although given the best of care. Dead birds were found along the railroads or in any place where the ground was bare and the view unobstructed. They were even seen to fall dead from the trees. Some of them were much emaciated; others seemed in fair condition, but their stomachs were empty. These birds died not in tens or hundreds, but in thousands. Reports indicating this came from all but four counties in Massachusetts.

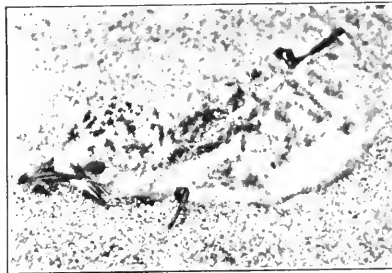
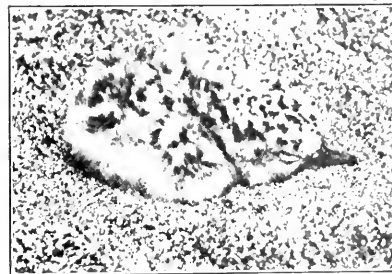
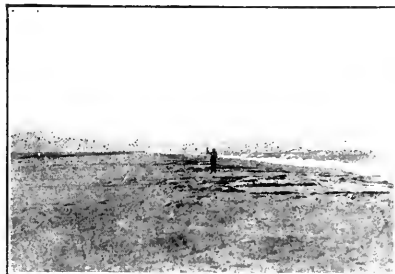
The following list of birds picked up dead has been compiled from lists sent me by many correspondents, and probably most of those that succumbed to the elements and starvation are included in it. The name of the warbling vireo is conspicuous by its absence, but the bird itself has not appeared this year in many localities in Massachusetts. This leads to the belief that something happened to the species farther south.



PIPING PLOVER.

1. Young and unhatched egg *in situ*.
2. Young, two days old, able to run.

3. Young fully fledged.
4. Adult.



LEAST TERN.

5. Beach on which it nests.
6. Nest with eggs and young recently hatched.
7. Young, three days old, hiding.
8. Young, about ten days old.

(Original photographs.)

LIST OF SPECIES OF BIRDS FOUND DEAD BY CORRESPONDENTS DURING
THE SPRING OF 1917.

Woodcock,	<i>Philohela minor.</i>
Black-billed cuckoo,	<i>Coccyzus erythrophthalmus.</i>
Downy woodpecker,	<i>Dryobates pubescens medianus.</i>
Flicker,	<i>Colaptes auratus auratus.</i>
Nighthawk,	<i>Chordeiles virginianus virginianus.</i>
Chimney swift,	<i>Chatura pelagica.</i>
Ruby-throated hummingbird,	<i>Archilochus colubris.</i>
Phoebe,	<i>Sayornis phabe.</i>
Yellow-bellied flycatcher,	<i>Empidonax flaviventris.</i>
Alder flycatcher,	<i>Empidonax trailli alnorum.</i>
Least flycatcher,	<i>Empidonax minimus.</i>
Blue jay,	<i>Cyanocitta cristata cristata.</i>
Crow,	<i>Corvus brachyrhynchos brachyrhyn-</i> <i>chos.</i>
Bobolink,	<i>Dolichonyx oryzivorus.</i>
Meadow lark,	<i>Sturnella magna magna.</i>
Baltimore oriole,	<i>Icterus galbula.</i>
Bronzed grackle,	<i>Quiscalus quiscula ancus.</i>
Purple finch,	<i>Carpodacus purpureus purpureus.</i>
Goldfinch,	<i>Astragalinus tristis tristis.</i>
White-crowned sparrow,	<i>Zonotrichia leucophrys leucophrys.</i>
White-throated sparrow,	<i>Zonotrichia albicollis.</i>
Chipping sparrow,	<i>Spizella passerina passerina.</i>
Song sparrow,	<i>Melospiza melodia melodia.</i>
Towhee,	<i>Pipilo erythrophthalmus erythroph-</i> <i>thalmus.</i>
Rose-breasted grosbeak,	<i>Zamelodia ludoriciiana.</i>
Scarlet tanager,	<i>Piranga erythromelas.</i>
Purple martin,	<i>Progne subis subis.</i>
Cliff swallow,	<i>Petrochelidon lunifrons lunifrons.</i>
Barn swallow,	<i>Hirundo erythrogastra.</i>
Tree swallow,	<i>Iridoprocne bicolor.</i>
Bank swallow,	<i>Riparia riparia.</i>
Cedar waxwing,	<i>Bombycilla cedrorum.</i>
Red-eyed vireo,	<i>Vireosylva olivacea.</i>
Yellow-throated vireo,	<i>Lanivirco flavifrons.</i>
Blue-headed vireo,	<i>Lanivireo solitarius solitarius.</i>
Black and white warbler,	<i>Mniotilta varia.</i>
Nashville warbler,	<i>Vermivora rubricapilla rubricapilla.</i>
Tennessee warbler,	<i>Vermivora peregrina.</i>
Northern Parula warbler,	<i>Compsothlypis americana usneæ.</i>
Cape May warbler,	<i>Dendroica tigrina.</i>
Yellow warbler,	<i>Dendroica aestiva aestiva.</i>

Black-throated blue warbler,	<i>Dendroica cærulescens, cærulescens.</i>
Myrtle warbler,	<i>Dendroica coronata.</i>
Magnolia warbler,	<i>Dendroica magnolia.</i>
Chestnut-sided warbler,	<i>Dendroica pensylvanica.</i>
Bay-breasted warbler,	<i>Dendroica castanea.</i>
Blackburnian warbler,	<i>Dendroica fusca.</i>
Black-throated green warbler,	<i>Dendroica virens.</i>
Pine warbler,	<i>Dendroica vigorsii.</i>
Prairie warbler,	<i>Dendroica discolor.</i>
Ovenbird,	<i>Seiurus aurocapillus.</i>
Mourning warbler,	<i>Oporornis philadelphia.</i>
Maryland yellow-throat,	<i>Geothlypis trichas trichas.</i>
Wilson's warbler,	<i>Wilsonia pusilla pusilla.</i>
Canada warbler,	<i>Wilsonia canadensis.</i>
Redstart,	<i>Setophaga ruticilla.</i>
Catbird,	<i>Dumetella carolinensis.</i>
Red-breasted nuthatch,	<i>Sitta canadensis.</i>
Veery,	<i>Hylocichla fuscescens fuscescens.</i>
Robin,	<i>Planesticus migratorius migratorius.</i>
Bluebird,	<i>Sialia sialis sialis.</i>

This destruction of insect-eating birds over a large part of the State is a serious matter in itself, but evidently similar conditions were maintained over a much larger area through northern New England to New Brunswick, at least as far south as Pennsylvania and as far west as Michigan. A few reports from other parts of the country indicate that the decimation of birds in many other regions was quite as serious as in Massachusetts. The "Michigan Sportsman" for August, 1917, alludes to the destruction of warblers and other birds by the elements in May, and asserts that at one time four dead warblers were brought in and many more were seen. The tameness of the birds also was spoken of. Mr. F. L. Burns of Berwyn, Pennsylvania, reported that a Mr. Sharples informed him that 12 miles away, in West Chester, fully 5,000 migrants were destroyed. Mr. T. T. Stevenson writes from Berwick, Maine, that hardly a pair of barn swallows was left alive in all the countryside, and very few cliff swallows, while only two pairs of tree swallows were seen within a radius of 15 miles. Mr. Walter Heinsohn writes from Evansville, Indiana, that many dead birds were found there, and that much of the country was under water so that the birds that nested in the bushes had been

drowned. Mr. Horace W. Wright reports, under date of July 16, 1917, from Jefferson Highlands, New Hampshire, that while he had seen no dead birds his friends had told him of some. He asserts that very few nesting warblers have been seen. Mr. Harry A. Hathaway of Providence, Rhode Island, reports that one teacher had 27 dead birds brought in, nearly all warblers, and another teacher received about the same number.

No one can tell how far the destruction of bird life extended, but a glance at the weather map seems to indicate that conditions more or less similar to those in New England during May existed nearly all the way across the continent. The temperature averaged 6 degrees below the normal for the month from western Maine to southern Pennsylvania, not including Long Island and the coast regions of Connecticut and New Jersey. From Maine the region of low temperature extended west to the north central part of the peninsula of Michigan. It ran south along the shore of Lake Michigan, southwest to St. Louis and west to California, taking in a wide belt of the Middle and Southern States west of the Appalachian Mountains, including only a small portion of the northern points of the Gulf States. East, west, north and south of this belt the temperature in the United States averaged only 3 per cent below the normal. The mercury was very low in a large part of New York State, where the average is given as 9 per cent below normal. The map showing precipitation exhibits as usual a greater amount of snowfall and rainfall in some regions than others, but sections showing 4 inches extend from Massachusetts west nearly to Utah. While it may be seen that the amount of rainfall for the month is not great, the rain and cloudy weather was scattered throughout the period, so that in every State in New England there were not more than two or three days when no rain fell. We might expect to find the mortality greater in those northern States where the temperature was lowest and the precipitation heaviest. Probably the lowest temperature would be found in western Maine, Vermont, New Hampshire and Massachusetts (excluding part of Bristol and Plymouth counties and all of Barnstable, Dukes and Nantucket counties); also in Rhode Island, most of Connecticut, New York, northern and western New Jersey, Pennsylvania, Ohio, Indiana and Michigan, and

this is the general region from which we actually have reports of mortality among the birds. It is possible, however, that in many parts of this great tract there was little mortality, as temperature, cloudiness and precipitation varied as always in different sections of the region. The average rainfall for the month over a greater part of it was not far from 2 inches, but there were large tracts where it equaled 4 inches, and at least two where it reached 6 inches. The heaviest rainfall came in States from which we have reports of bird mortality. It is quite possible that birds were destroyed in the region west of Michigan, where the temperature was not quite so low, but the probability is that the difference in temperature made conditions easier for them there. Nothing has been heard of any bird catastrophe in the south, and little is known about the effect of the backward spring in Canada, where it may have been very destructive to bird life. The great catastrophe, then, seems to have been confined mainly to a large part of a tract about 1,000 miles in width, extending from Pennsylvania and Michigan north into Canada; but just how far, no one knows.

The enemies of birds, having considerable difficulty in finding other food, concentrated largely on the starving birds, which could be easily captured. Almost everywhere cats were reported as killing considerable numbers. One observer affirms that a cat brought in four birds in one day; others assert that their cats brought in birds every day; another records that one cat brought in sixteen warblers. Squirrels are reported as lacking food and very thin, and as raiding the nests of birds and destroying their eggs and young. Mr. C. A. Clark of Lynn observed that one gray squirrel having an open nest in a tree removed her young to a hollow tree, apparently to protect them from the cold and rain. In western Massachusetts many mother birds were reported to have died on their nests. Along the coast, where the nests of robins were exposed to driving storms, very few young robins survived. Many birds which built nests early in the season were unable to hatch their eggs because of the severe storms and cold weather, or because the eggs were infertile. As there were no leaves upon the trees, eggs and young were exposed not only to the storms but also to the attacks of jays and crows, which, unable to find sufficient insect

food, turned to the uncovered and unprotected nests of the smaller birds for food. The rains in some instances produced floods in the rivers, and in these floods undoubtedly many nests of ground-nesting and bush-nesting birds were destroyed.

It is interesting to note that during the cold wave of 1917, migrating birds which were late in coming were also late in departing for the north. Recent investigators, both in Europe and America, have expressed the belief, after long years of observation and record, that the state of the weather has little effect on the migration movements of birds; but my records show that in years of exceptionally cold or stormy weather the majority of the birds are late in coming from the south and late again in moving on to the north. This proved to be the case this year, for the migration of warblers which usually passes on in May had not entirely passed until after the middle of June. It seemed to be at its height the last week in May. The blackpoll warbler ordinarily is about the last to appear and depart. The species was reported from more than one locality until the 15th of June. Mr. Myles S. McGeever saw a male near Lowell on June 17. Some of the winter birds remained longer than usual. Mr. Freeman B. Currier reports the pine siskin at Newburyport June 6. Evening grosbeaks and juncos stayed well into May. Many people report a subsequent lack of summer birds. This was particularly noticeable in the higher lands and to the north. An inquiry sent out in October elicited many replies to the effect that few migrating birds had been seen on the southward migration, particularly warblers, with the exception of the myrtle warbler, which came in larger numbers than usual. The myrtle warbler, however, is not so seriously affected by cold and storms as are other species, for it is able to live on seeds and berries.

Possibly some of the birds which were suffering from cold and starvation might have been saved by proper feeding. The stomachs of most of the warblers are not fitted for digesting seeds, but it is interesting to note that pine warblers in some cases fed on suet, the finer parts of chick feed were eaten by some, and a few were seen to peck shreds of meat from beef bones hung on the trees. Mrs. Kate Denig Tower writes from Port Clyde, Maine, that all the birds that come to her feeding

station are fond of doughnuts. Among others she names olive-backed thrushes, which she says prefer doughnuts to any other food; also myrtle and parula warblers. Hon. Edgar S. Hill of Dudley observed that tanagers and some other species were very fond of cake. This was the only food that he provided that was eaten by them, but they came to the dooryard to get it. The cold, wet season apparently has been very destructive to the young of grouse and other game birds. Some observers report finding only one or two young grouse in a brood. This, following a winter flight of goshawks, which are destructive to grouse, undoubtedly has reduced the number of these birds seriously during the past two seasons.

A severe storm accompanied by a strong wind and a sudden drop in temperature sometimes kills many birds. Such conditions occur more often in the States and provinces north of Massachusetts than here. Mr. Ruthven Deane recalls such an instance¹ which occurred on the Gaspé Peninsula, Quebec, early in June, 1914, after which many warblers were found dead. The temperature did not reach the freezing point at the time, but there was a very heavy fall of rain. This seems to have been a local rather than a widespread calamity, but in 1907 conditions in Ottawa and Quebec were much the same as in New England this year, and Rev. G. Eifrig reports² that many warblers and other species succumbed to the untoward conditions. Miss Althea Sherman records similar bird destruction at that time in Wisconsin, Iowa and Minnesota. She asserts that the belt of destruction here was at least 100 miles wide. She refers to this as the year of the "great death," and as a result of her studies and observations believes that millions of birds perished, and that after the catastrophe the number of warblers migrating through that region was reduced to about 2 per cent of their former numbers. After six seasons, they had increased, in 1913, to about 10 per cent.³ Probably the decimation of warbler life the present year is not so severe as at that time, but it seems to have extended over a much wider territory. However, more data are needed to establish its full extent.

¹ Auk, Vol. XXXI., October, 1914, p. 548.

² Auk, Vol. XXV., January, 1908, pp. 1-9.

³ Bird-Lore, Vol. XVII., September-October, 1915, pp. 375-377.

A BUREAU OF INFORMATION REGARDING THE DISTRIBUTION AND MIGRATION OF MASSACHUSETTS BIRDS.

The office of the State Ornithologist has become perforce a bureau of information regarding birds and the means for their protection, but has not specialized on distribution and migration. The act establishing the office of the State Ornithologist assigned to the incumbent as one of his duties the investigation of bird distribution in the Commonwealth. It is impossible for the State Ornithologist himself to conduct a survey of the State, as the requisite means and assistance have not been provided. House No. 175, now chapter 75 of the General Acts of 1917, was enacted to secure some assistance for this purpose. Under this chapter a large corps of observers, representing every county of the State, has been organized; blanks containing a provisional list of the birds of the State have been prepared with spaces for observers to fill out with information regarding bird distribution, migration, food, habits and other important data. No adequate record of the movements of migratory birds in the Commonwealth has ever been kept. It is now purposed to extend the organization into contiguous States, that observers here may be warned of unusual flights of birds that are moving in this direction, so that all may be on the lookout for them. Thus a more complete record of such flights may be secured. All who are interested in this undertaking are requested to address the State Ornithologist, Room 136, State House, Boston, Massachusetts. Already some new and interesting information about certain species has come in.

INCREASING BIRDS AND UNUSUAL FLIGHTS.

Recently there seems to have been a considerable increase in the numbers of mockingbirds and house wrens in the State. An unprecedented number of Tennessee warblers was observed in the spring migration of 1917, and Cape May warblers were unusually numerous. Little blue herons and egrets were reported during the summer. The largest flight of swans on record in recent years passed along the coast in October and November. Following a great scarcity of northern hares in the

"fur countries," a large flight of great horned owls and a smaller flight of goshawks moved into the Canadian provinces just north of New England, and already have appeared here; but for want of space these and other migrating birds must be recorded in detail elsewhere.

HOODED MERGANSER IN A NESTING BOX.

The first instance of the nesting of a hooded merganser in a nesting box prepared for it (see page 77) is important to all who are interested in the conservation of wild fowl, and although it occurred on the Pacific coast the box may be imitated here. Even though such nesting places may not be used by mergansers in this region, they are quite likely to furnish domiciles for wood ducks if put up along the banks of secluded streams, or flooded swamps with wooded shores, or even by forest lakes. Mr. J. H. Bowles of Tacoma, Washington, the indefatigable ornithologist who put up the nesting box of which he has kindly forwarded me the photograph, found the box occupied by a hooded merganser's nest with 10 eggs on April 21, 1917. He writes me that all his friends considered the boxes as a standing joke, as they believed that any duck as shy as a "hoody" would fly a mile at the sight of one. "You may judge," writes Mr. Bowles, "that it was not easy to carry heavy boxes and a long ladder through such a place, but now I am repaid many times." He does not give the size of the boxes, but wood ducks have nested in a similar box 10 by 10 by 4 inches, with a round entrance 3 or 4 inches in diameter and 18 inches from the bottom.

CONSERVATION OF WILD LIFE IN RUSSIA.

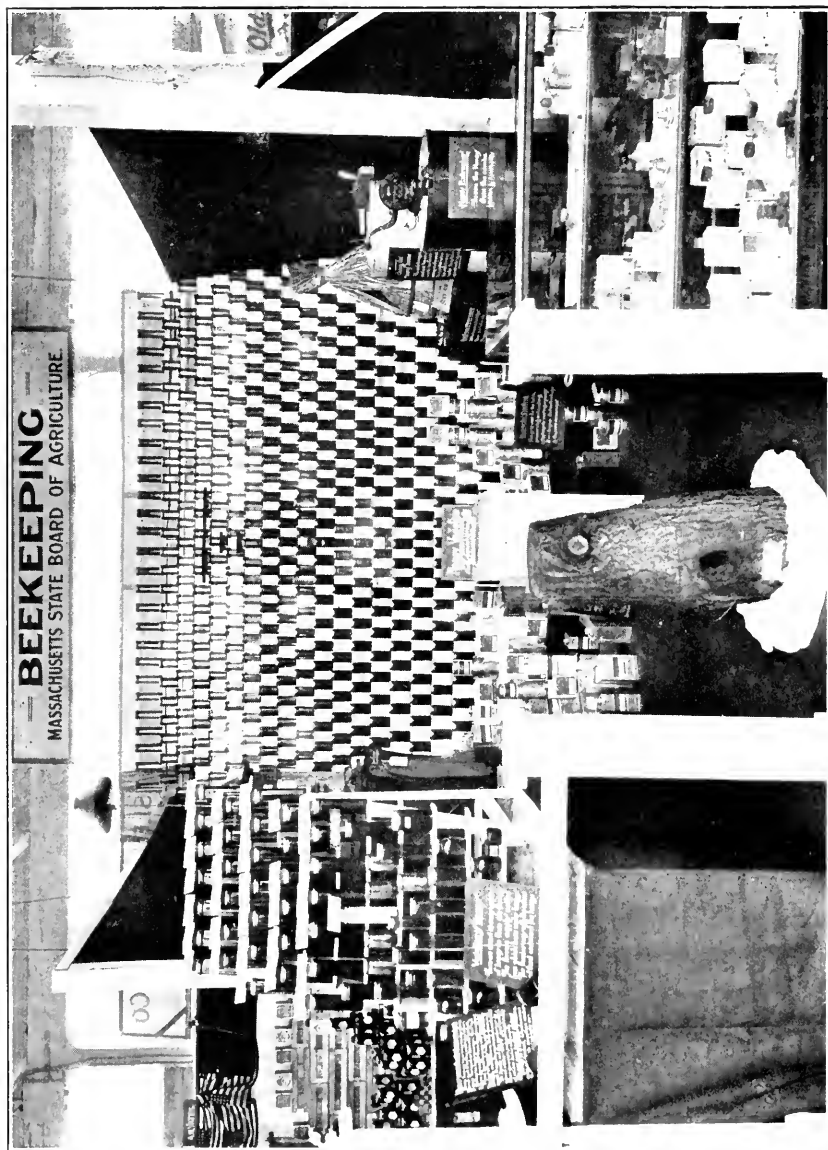
During the year a long and fruitful correspondence has been carried on with Georges Brisgualine and Boris Alexandrovitch Zakharoff, Kharkoff, Russia, members of a Russian commission for the conservation of birds and other wild life, who have requested information regarding methods in use in the United States. Notwithstanding the terror and confusion caused by the war and the rebellion, Russia already has established reserva-

tions for the protection of wild life, and several pamphlets on the subject of Russian conservation have been forwarded from Kharkoff to this office, which show an understanding of the problems involved and exhibit advanced methods for dealing with them. Such requests as those received from Russia have come also from other countries, and always have been complied with.

Respectfully submitted,

EDWARD HOWE FORBUSH,
State Ornithologist.

DECEMBER 4, 1917.



Massachusetts State Board of Agriculture Beekeeping Exhibit at the Eastern States Exposition, October 12 to 20, 1917, Springfield.

EIGHTH ANNUAL REPORT

OF THE

STATE INSPECTOR OF APIARIES.

PRESENTED TO THE BOARD AND ACCEPTED,
DECEMBER 4, 1917.

EIGHTH ANNUAL REPORT OF THE STATE INSPECTOR OF APIARIES.

To the Honorable State Board of Agriculture.

This year apicultural conditions in Massachusetts have materially changed. As a result, the inspection methods and duties were necessarily promptly modified. The service to be rendered the beekeepers during current unsettled conditions could not be the same as heretofore. On May 1 the writer offered his services to the United States Department of Agriculture, and was appointed collaborator in beekeeping for the Bureau of Entomology. This placed directly at the disposal of Massachusetts beekeepers the facilities of the United States Department of Agriculture. Notice was at once sent out to the beekeepers of Massachusetts, outlining the assistance which could be afforded them. This announcement was followed by successive circular letters, bulletins and report forms. Finally, in September a letter on the preparation and wintering of bees was issued. Lists of government publications, and a similar list of standard books on beekeeping, known as "The Beekeepers' Book-shelf," were issued. Thus each known beekeeper in Massachusetts was repeatedly advised of current conditions. This circularization greatly increased the correspondence. Inquiries were received from those not before heard from. It also afforded opportunity to place at the disposal of the beekeepers, upon their request, hundreds of publications. It seems, therefore, that an immense amount of instructional work has thus been accomplished. The program will be continued under the same co-operative arrangement.

FEDERAL EMERGENCY MEETING IN WASHINGTON.

Prior to receiving the collaboratorship, the writer responded to a call by the government apiarist to meet in Washington on April 23 with prominent beekeepers from various parts of

the United States. The purpose of the meeting was to consider plans whereby the country's honey supplies could be increased. At that date the country was facing a forecasted 10 per cent. sugar shortage. It was not proposed to produce honey as a sugar substitute but to supplement the supply. Furthermore, it was realized that honey was to be exported freely for use in foreign countries. At that time the use to which it was being placed was not definitely known, but it was presumed to be used as a trench food. Since then the writer has found out, in conference with an officer in the Canadian army, that honey has served a good purpose instead of sugar in the hospitals. Realizing a general national and foreign need of honey, the conference at Washington drew up twelve recommendations which were presented to the secretary of agriculture and to the beekeepers of the country. Briefly, it was recommended:—

1. To urge honey producers to increase their production, giving preference to extracted honey in order that the total supply might be the more greatly increased.

2. To urge the inspectors of apiaries to emphasize educational work, even to take precedence over the inspection of individual colonies, in order that the message of greater production might be carried to more beekeepers.

3. To urge the formation and co-operation of county and local associations, and, in areas of large production, to urge co-operative buying and selling associations.

4. To urge the co-operation of bee journals and the agricultural press.

5. To urge the teachers of beekeeping and extension workers to increase their activities and to co-operate with the Department of Agriculture in instructing beekeepers for increased production.

6. To urge the railroads to co-operate in the delivery of beekeepers' necessities. A committee was selected to co-operate with government agencies.

7. To urge the manufacturers of beekeepers' supplies to meet the demands of the beekeepers and handle their orders promptly.

8. An appeal was also made to the jobbers of beekeepers' supplies to anticipate the needs of their customers.

9. The producers were appealed to, to foresee their demands as early as possible.

10. In that case there would not be a lack of containers when the crop was taken off. In handling this serious problem of procuring containers, a further report is made below.

11. For eastern United States, particularly, the desirability of selling as much of his honey as possible on home markets was especially recommended to the beekeeper, thereby acquiring a greater profit to himself, commensurate with the cost of production and retail marketing. By this home marketing it was hoped to ease the freight situation.

12. Arrangements were perfected whereby the beekeeper, especially the large producer, would be able to receive information concerning supply and demand, and also the sales of the wholesale markets. On July 1 a new service in the Office of Markets of the Department of Agriculture was inaugurated, whereby market reports on honey and beeswax become available.

Glass Container Situation.

The container situation is spoken of above. Returning from Washington the writer visited packer glass manufacturing houses in New York City, ascertaining to a large extent the then current situation in production. It was found that certain limitations had been encountered. The recommendations of the glass manufacturers were procured and issued to the beekeepers, notable among which was their request that orders should be placed early, and for stock patterns to the exclusion of fancy or private patterns. At that time, orders were accepted by some concerns for delivery at the end of two or three months. In order, therefore, that the beekeeper might with certainty have containers available in time for his crop, the writer furnished every assistance possible to procure the necessary glass.

Emergency Meetings.

As was urged at the Washington meeting, emergency meetings of beekeepers were promptly called. Six were held, so that Massachusetts was thoroughly covered. The plans for the year

were outlined, and the recommendations of the convention in Washington were emphasized. At once the beekeepers showed their interest and co-operation.

THE APPOINTMENT OF BEEKEEPING AGENTS.

In order to bring closer relationship between beekeepers and inspectors, the secretary of agriculture has appointed, in so far as they are available, beekeeping agents, who serve locally in their respective towns or groups of towns. These agents, although there is not yet appointed a representative in each town in the State, have already rendered invaluable assistance to their constituents and to the inspector. The writer takes pleasure in formally thanking the beekeepers who have volunteered their services for their hearty co-operation.

Typical of the reports of some of the beekeeping agents is the following, which summarizes fall conditions in a given town, under date of October 22: —

The bees of this town have done well in the production of comb honey [speaking of the season of 1917]. There are only 15 swarms in town, and these have produced about 50 pounds of honey per colony. They are free from disease and appear to be in good condition for the winter.

Similarly another agent reports: —

Old colonies will probably winter. . . . As near as I can learn there is very little foul brood in this section.

Such reports as these at once acquaint the inspector with the local beekeeping conditions, and enable him to devote to other work the many days which an investigation of the various sections would take. It is anticipated, as the organization of the agents is perfected, that the service of additional beekeepers will be enlisted for the coming year.

At the present writing a letter is being prepared for each agent, urging him to report colonies of bees which are to be abandoned this winter due to the enlistment or other departure of their owner. Thus apiaries may be conserved for service next year. The agents are also being urged to render any as-

sistance possible to prevent the starvation of bees during the winter as a result of the critical sugar shortage which is referred to elsewhere. In all, there are fifty-eight agents now serving.

THE LISTING OF EXTRACTORS.

Co-ordinate with the desire to increase extracted honey production the inspector has listed, in so far as they are known to him, the extractors of the State. The free use of practically all of these extractors is offered to near-by beekeepers, provided arrangement can be made so as to avoid undue inconvenience. In most instances, it is preferable that the beekeeper take the combs of honey to be extracted to the premises of the owner of the extractor. It is surprising to have ascertained that upwards of forty extractors are available in various quarters of the State. Similar arrangements for the extractor service will be undertaken during the next year, believing that Massachusetts is adapted to extracted honey production particularly.

The beekeeper should realize that after extracting he has assets in his combs, which are ready to be used over again; that at least a third to a half and perhaps more of the extracted honey may be produced per colony than comb honey; that the disagreeable features connected with swarms can be more easily eliminated and controlled with extracted honey production than with comb honey production; that colonies which are in condition to yield no comb honey are often made to yield some in extracted form; and that to-day it sells for as much as or sometimes more per pound than comb honey. Moreover, European foul brood is controlled with peculiar ease in colonies for extracted honey. Beekeepers are urged to consider carefully the advisability of extracted honey production in 1918. There will be no overproduction it may be reasonably prophesied.

BROOD DISEASES OF BEES.

The work in the suppression of brood diseases of bees has been continued as usual. One thousand eight hundred and ninety-seven apiaries were visited, of which it was found necessary to quarantine 58 (46 for European foul brood and 12 for American foul brood).

American Foul Brood.

American foul brood is, as was previously reported, gradually retreating into the background. The relatively constant decline previously reported is continuing.

European Foul Brood.

The infection of European foul brood this year has not been serious. Consistent progress in its suppression is being made (172 colonies being found). Beekeepers should realize that this is a persistent disease and needs to be watched with particular care. The Italianization of the stock, however, is proving an important factor in resisting the infection. Not all Italians are equally resistant. Hence, it is being urged that resisting strains of Italians be utilized in so far as possible. This is a policy which was outlined in the writer's report of last year. This disease can be controlled and honey cropped, especially if extracted honey be produced.

Sacbrood.

There seems to have been a considerable amount of sacbrood this year. Perhaps this is due to a keen search on the part of the inspectors. Sacbrood, however, is not regarded as serious in Massachusetts; usually requeening the colony will check the disease. Nevertheless, the beekeepers should not allow sacbrood to persist in their colonies, as it does deplete the working force.

DISEASE OF THE ADULT BEE.

In 1916 the writer reported the visit of the eminent English specialist on diseases of the adult bee. As in 1916 isolated cases of adult mortality were found, so in 1917 there were reported cases in which colonies died from an unknown cause, or were depleted by what has been spoken of as "shaking" or "semi-paralytic" bees.

Colonies which were observed to have these abnormal bees — the so-called "creepers," reported as having been observed in May, 1916 — have been kept under constant observation at

Amherst since that time. These same colonies have shown similar tendencies by periods. In August, 1917, however, new queens were introduced to some of these colonies with the hope that the disorder could be abated. Observations will be made in 1918.

In summarizing the adult mortality situation it may be said that the loss of colonies apparently through this cause has been slight, if any. The requeening of affected colonies is considered effectual. The presence of "creepers" or "sick bees" in colonies which went into winter quarters in 1916 apparently had little or no effect upon the ability of the colony to winter successfully, as was feared might not be the case. The problem in Massachusetts thus far has shown no serious consequences, but should be closely watched.

SPRAY POISON.

In years past the inspector has had considerable alleged spray poisoning of bees reported to him. During the past year, however, little or no damage is thought to have resulted from improper use of spray poisons; at least, few complaints have come to the writer's attention. It is hoped, therefore, that the proper use of spraying materials is more thoroughly understood in its relationship to the welfare of the beekeepers. Doubtless the weather conditions which prevailed during the spraying of fruit trees in 1917 were such that unfortunate results on bees may have been largely avoided.

WINTER LOSS.

The winter of 1916-17 found colonies of bees well prepared, strong and well stored. Little necessity for feeding of sugar for stores was encountered. The mortality during that winter was not much greater than during the preceding one, being 26 per cent.

It is unfortunate, however, that bees going into winter quarters for 1917-18 are not so well equipped with stores. Warning to pack and protect colonies this winter, in order to conserve them, was issued in September. Since then sugar has been unprocureable and high; furthermore, it is difficult to obtain

sugar for feeding bees, without discrimination, when it is so urgently needed for household purposes. It is estimated that in some quarters of the State colonies yet need on an average of at least 10 pounds of additional stores. How this is going to be supplied is yet a question. It is hoped that the public demand for sugar will ease before bees are actually starving, and hence make possible the supplying of candy to furnish the needed stores of the colonies. Whatever assistance is possible will be rendered to the beekeepers. It is at present urged, if possible, to secure damaged, spoiled, dirty or water-soaked sugar from whatever stores possible, and even in small quantities. This may enable the beekeeper to utilize that which is not of service to the baker or household. The latest information, however, indicates that the Food Administrator will devise a plan whereby beekeepers may, in the emergency, secure sugar necessary for maintaining their colonies. It should be remembered, moreover, that there are two forms of candy suitable for emergency wintering stores, — soft candy¹ and hard candy.

DISPLAYS AT FAIRS AND EXPOSITIONS.

As in 1916, the State Board of Agriculture exhibited at the Eastern States Exposition, Springfield. This year a larger display of honey was prepared, in which it was emphasized that there was more than one kind of honey; that extracted honey was the more economical to purchase; and that the flavor of honey varies with its color. The grading of honey according to its color was also shown. The display included, moreover, comb honey, beeswax and beekeeping equipment.

In preparing the display the best honey produced in Massachusetts was solicited and bottled. Beekeepers were also solicited for beeswax. Most favorable comments were made as to the instructiveness and attractiveness of the display.

In the forepart of the illustration (frontispiece) showing a general view of the honey booth is a bee log containing a wild colony as captured in the woods near Springfield. This proved an unlimited attraction.

¹ Apiary Inspection Series, Bulletin No. 7A, entitled, "Soft Candy for Bees," may be had upon request.

Future Displays.

It seems desirable from year to year that honey displays should be improved, and matters of displaying perfected. Honey is not an easy material to show. It must be kept away from the flies and dirt. It must be properly illuminated. Hence, means of displaying honey can be greatly developed. Moreover, the beekeeper has had no standard to which he can match his competitive displays. It would therefore seem a proper function at the agricultural and other fairs to devote attention to carefully arranged beekeeping exhibits which shall serve not only to inform the public of the value and utility of honey but also to inform the beekeepers what and how to display. It is therefore suggested that an especially prepared exhibit, which can be shown at a limited number of fairs during the coming season, be arranged. This display should be in conformity to the schedule of premiums offered for honey and apiarian products. It might be expected that such a display would stimulate better and more extensive exhibiting. It should have a distinct effect on the purchasing public, which should increase the utilization of honey.

THE 1917 MARKET FOR HONEY.

It was thought in December, 1916, that the crop of that season was having a phenomenal sale. Prices advanced and beekeepers soon disposed of their crops. The demand for honey in 1917, however, far exceeds any previous demands. Prices have advanced materially. As yet there is no stability in the market, however. It is anticipated, nevertheless, that the 1917 crop will have soon been disposed of. Vast shipments of this crop are being made to foreign countries. It is therefore imperative that the crop of 1918 be as large as possible. It can safely be said that there will be no overproduction. With this in mind, beekeepers are again urged to consider extracted honey production.

LARGER APIARIES NEEDED.

There are in Massachusetts approximately 4,600 persons who have from 1 to over 100 colonies of bees. The number who have from 50 to 100 colonies are few. By far the majority keep but a small number. It has been amply demonstrated, however, that beekeeping, if properly attended to, can be profitably managed in Massachusetts. Bees, it has been said before, can be kept in any locality, but this should be qualified by the fact that they will thrive and do better in some localities. The honey flora is not as intense in Massachusetts as in some parts of the United States. This, however, is no vital limitation. It merely suggests the necessity for the beekeeper to adapt his methods and manipulations according to his local conditions, which, moreover, would be requisite in any locality, no matter how superior.

While beekeeping in Massachusetts to-day is on a far more productive basis than it was ten years ago, or even five years ago, there is still chance for vast improvement. There are doubtless many colonies which are not particularly productive, largely because of improper care or neglect. These unproductive colonies should be made to produce. It therefore seems eminently fitting in a time of need to urge and endeavor to procure more producing beekeepers, — those who would maintain a larger number of colonies. In a word, Massachusetts greatly needs a few more large-scale beekeepers.

In this report there is not space to enlarge upon the subject. It may be briefly said, however, that a system for Massachusetts should include the out-apiary principle of beekeeping. It is quite possible, in most localities, to maintain at least 50 colonies in a yard. Spread these yards, as out-apiaries, at about 3 to 6 miles apart. Thus a territory can be thoroughly covered. It will be surprising to observe the difference in the honey and its yield from season to season in these several yards, even though they are but a few miles apart. One yard may be yielding heavily, while another is not producing.

Coupled with the fact that many a colony has this year, by force of circumstances, been put away ill prepared for wintering is the fact that more intensive beekeeping should be practiced

in Massachusetts; and there is the urgent necessity for the conservation of our beekeeping resources. It therefore becomes virtually imperative that those who are fitted to expand their beekeeping business should take over ill-prepared, non-producing or perhaps abandoned colonies of bees. It is therefore urged that careful consideration be given the project at once, with the hope that colonies which may die before spring, or be abandoned during the early season of 1918, may be turned into producing colonies this next season. The unqualified success of the larger producers of Massachusetts in disposing of their crops locally should be an encouragement to all who contemplate more intensive beekeeping.

MISCELLANEOUS WORK.

Correspondence.

Coupled with the propaganda work before mentioned there has been an increased correspondence. Much of this is taken care of by the bulletins and circulars. However, the actual correspondence of the year can be said to have increased materially.

Publications.

The inspection service has distributed large numbers of bulletins, including those issued by the United States Department of Agriculture and some by various States. Two publications have been prepared and issued this year.

Bulletin No. 11 is the "Seventh Annual Report of the State Inspector of Apiaries for the Year 1916."

Bulletin No. 12 is entitled "The Interpretation of the Net Weight Regulations for marketing Honey," and was issued in November.

Meetings.

Besides the six emergency meetings elsewhere mentioned the writer has attended various meetings and field days of the beekeepers' societies, both in Massachusetts and outside the State. The meeting of the American Association of Economic Entomologists in New York City, December, 1916, was also attended. At this meeting of the official apiary inspectors the State Inspector was elected chairman of the section of apiculture.

Demand for Bees.

Along with the effort for increased honey production came an unusual demand for bees. There seems to be a tendency for more people to undertake beekeeping. It is difficult to show the increase in figures (the office has listed during the year 571 new beekeepers, which may safely be said to exceed the increase of the last few years).

Appointments.

The inspectors serving during the season were as before: Mr. O. F. Fuller of Blackstone; Mr. Edwards Thorne of Worcester; and Mr. Ivan Rawson of Richmond, who was appointed on June 5, 1917.

FINANCIAL STATEMENT, NOVEMBER 30, 1917.

Appropriation,	\$2,000 00
Compensation of inspectors,	927 50
Traveling and necessary expenses,	783 69
Supplies (postage, printing, etc.),	96 35
Clerical services,	103 66

Respectfully submitted,

BURTON N. GATES,

State Inspector of Apiaries.

AMHERST, MASSACHUSETTS,
December 4, 1917.

TWENTY-SEVENTH ANNUAL REPORT

OF THE

DAIRY BUREAU

OF THE

MASSACHUSETTS BOARD OF AGRICULTURE,

REQUIRED UNDER

CHAPTER 89, SECTION 12, REVISED LAWS.

JANUARY 12, 1918.

DAIRY BUREAU—1917.

OMER E. BRADWAY, MONSON, *Chairman.*

GEORGE W. TRULL, TEWKSBURY, P. O. LOWELL, R. F. D.

GEORGE E. TAYLOR, JR., SHELBURNE.

Secretary.

WILFRID WHEELER, *Executive Officer and Secretary of the State
Board of Agriculture.*

General Agent.

P. M. HARWOOD,

ADDRESS, ROOM 136, STATE HOUSE, BOSTON.

REPORT OF THE DAIRY BUREAU.

The European war, in which this country is at present engaged, has not been without its effect on the work of the Dairy Bureau. Resulting high prices have led to increased law violations on the one hand, while on the other, scarcity of labor on dairy farms has caused a decreased number of entries in the clean milking contest.

The number of prosecutions for violations of dairy laws was 93, convictions being obtained in all cases; 40 of these were for violations of oleomargarine laws, 49 for violation of the renovated butter law, and 4 for selling adulterated milk. Sales of condensed and evaporated milk have been investigated, but no violation was found to warrant prosecution. The total number of inspections of stores, wagons, etc., for the year was 6,540.

The number of entries in the clean milking contest was 352, and 138 prizes were awarded. Details of this contest will be found in a special report upon the subject.

PUBLICATIONS.

A new illustrated folder on the food value of milk, prepared by the general agent, was published, and 35,000 copies have been distributed. Leaflets E, F, G, H, I and J, by the same author, and all relating to milk, its food value, its products or its production, have been published, and approximately 250,000 copies have been distributed.

Supplements of the dairy laws, embodying 1916 and 1917 legislation, have been published. A list of Massachusetts dairymen owning three or more cows is being prepared.

LECTURES, CONFERENCES AND CONVENTIONS.

The general agent has delivered fifteen lectures on dairy subjects during the year. He represented the Board of Agriculture at two conferences on food production with the Federal Food Administration and the Department of Agriculture, at Washington, District of Columbia. He also represented the Dairy Bureau at a mass meeting of Dairy Interests, held at Columbus, Ohio, in connection with the National Dairy Show.

Agent A. W. Lombard attended the annual meeting of the International Association of Dairy and Milk Inspectors at Washington, District of Columbia, where he read a paper and was elected president of the association for the ensuing year.

INVESTIGATIONS.

The chairman of the Bureau, with one member and the general agent, spent several days investigating creameries, milk stations and dairies in Vermont, with a view to obtaining first-hand information as to the result of co-operation as practiced in that State. The following cities and towns were visited: Brattleboro, Wardsboro, South Londonderry, Peru, Pawlet, Ira, Rutland, Bridport, Vergennes, Burlington, St. Albans, Enosburg Falls, East Berkshire, Alberg, South Hero, Richmond, Bolton, Stow, East Hardwick and St. Johnsbury. At Richmond the Bureau found an ideal milk plant, a real model of its kind. A similar plant has just been completed at East Berkshire, and we were informed that one was to be built this winter at Newport. What was once pronounced by a Federal inspector as the cleanest creamery in the United States is at Wardsboro, and is operated by a woman, Miss Hanna Halonen. The product of this creamery is sold in North Adams, Massachusetts. We were especially impressed with the excellent butter made at Mount Mansfield Creamery in Stow, a sample of which won first prize at the recent Eastern States Exposition held in Springfield, Massachusetts. The Lamoile Valley Creamery at East Hardwick was particularly interesting from the fact that it is the largest creamery in New England. No one can travel over the State of Vermont without being im-

pressed with its wonderful adaptability for dairying. Thousands of acres by the shores of Lake Champlain, along the river valleys and up and down the hillsides of the State show wonderful natural fertility of soil, and produce an abundance of sweet grasses necessary for dairy production of quality. Several cheese factories were visited, notably those at Pawlet and Ira, also two condensaries, one at St. Albans, owned by H. P. Hood & Sons of Boston, and the other at Enosburg Falls, owned by the Federal Packing Company of Philadelphia. Many of the farmers keep from forty to fifty cows, and some have dairies of one hundred or more each. Other sources of income for the farmers of the State are livestock, hay, potatoes, sweet corn and string beans sold to canneries and maple sugar.

DAIRY EXHIBITS.

The Bureau made an exhibit of the results of the 1916 clean milking contest, together with a display of food value of milk, chemical analysis of milk, and photographs relating to dairy and country life, at the Public Winter Meeting of the State Board of Agriculture at Springfield. This exhibit attracted much attention and favorable comment. The Bureau also aided in the milk show which was conducted by the Allied Dairy Interests. The Bureau furnished an exhibit for health week in Winchendon in February; also for farmers' week at Amherst in March, at Palmer Fair in September, and at the Eastern States Exposition at Springfield in October. The agricultural exhibit at the latter show, and the general show held in connection with the Public Winter Meeting of the State Board of Agriculture, were superintended by Agent A. W. Lombard.

LEGISLATION.

The Bureau proposed no milk legislation, but labored to secure the passage of the following general acts, viz.: chapter 112, prohibiting the charging of fees for dairy, milk and livestock inspection; chapter 189, harmonizing the relationship of total milk solids and milk fat in the legal standard; chapter 224, permitting the incorporation of agricultural and horticultural organizations under laws relating to business corporations; chapter 256, establishing Grade A Massachusetts milk;

and chapter 259, defining pasteurized milk and regulating its sale. Chapter 256 we believe to be a step in the right direction, but as amended and finally passed its usefulness was greatly impaired.

THE DAIRY SITUATION.

It has been the policy of this department for years to make clear to the consumer the food value of milk in the hope that increased consumption would ultimately result in making milk production independently profitable. We have opposed all schemes which tended to discourage people from using milk, or to encumber the business with needless expense. During the early autumn months of 1917 the Massachusetts public, becoming accustomed to the general advance in food prices, apparently viewed with a fair degree of equanimity the proposed advance in milk prices, and it looked as though the milk business might, at last, be placed on a satisfactory basis. The New England Milk Producers' Association had demanded 8 cents a quart delivered in Boston, and that price was approved by the Food Administrator. Suddenly one of the large dealers made a proposition to sell milk in some 50 stores for 10 cents a quart, provided 10 tickets costing \$1 were purchased. This proposition, which was at first agreed to by the Food Administrator, was later canceled. Previously, in both New York and Chicago, the producers had made demands in a manner which resulted in prejudicing the public mind against paying advanced prices for milk anywhere. The Federal Food Administration finally called for the establishment of regional boards to investigate the cost of milk production and milk distribution, and to fix prices. The contracts made between the dealers and the New England Milk Producers' Association for milk to be delivered in Boston at 8 cents per quart were suspended, and $7\frac{1}{2}$ cents per quart was decided upon as the price to be paid producers, pending the investigations, and the assurance was given that the prices would be made on a basis of reasonable profit to the producer. (Since the above was written the regional board has fixed the price to producers at $8\frac{1}{2}$ cents per quart for milk delivered in Boston during January, February and March, and the retail price to family trade, delivered, at $14\frac{1}{2}$ cents per quart.)

In view of danger of future shortage of cows this department last spring published a statement and distributed it among farmers, urging them not to sell their stock and to raise all the good heifer calves possible, because the prices of both dairy cattle and milk would steadily increase. We are now officially informed that the world's shortage of cattle is upwards of 28,000,000 head. On account of the shortage of hired men on dairy farms we have also urged that, whenever possible, milking machines be used on the larger farms, while on the smaller farms women and children unite with the older men to relieve the situation.

When considering the milk question it should be borne in mind that even at 15 cents a quart milk is one of the cheapest animal foods obtainable; that children cannot thrive well without it; that market-milk production is not and never has been over profitable; and that the dairy farmer must realize a profit in order that he may continue in business. The consumer should always remember that he cannot well do without milk, and that the producer can earn his living in some other way; that, *food value considered*, butter at 60 cents a pound is relatively inexpensive, and that milk, cream, butter and cheese contain growth-promoting factors which either do not exist at all, or exist in far less degree, in their substitutes. At the recent National Dairy Show at Columbus, Ohio, experiments with growing rats were in progress, showing that animals fed on rations containing milk fat thrived, while others fed on rations in which vegetable oils had been substituted were wasting and dying. Yet some food economics teachers are encouraging the use of butter substitutes. Slowly but surely the consuming public is coming to appreciate the real facts concerning the food value of milk and milk products, their vitamins, ready digestibility and general all-round superiority. To deprive children or even grown people of an abundance of milk, cream, butter and cheese is poor economy, while depriving children of these essentials, especially milk, is near criminal. By substituting milk and milk products for meats in dairy rations a material financial saving can be made.

DAIRY STATISTICS.

The number of dairy cows assessed in this Commonwealth April 1, 1917, was 149,077, which, compared with 147,634 assessed in 1916, shows an increase of 1,443. This condition is gratifying, for, excepting the loss by foot and mouth disease in 1915, there has been no decrease due to adverse dairy conditions in the last three years.

For the year ending November 30, 1917, 142,474,364 quarts of milk were shipped into Boston by rail, and the year previous 118,516,214 $\frac{3}{4}$ quarts of milk were shipped into Boston, showing the large increase in 1917 of 23,958,149 $\frac{1}{4}$ quarts.

PROPOSED GRADE HEIFER CONTEST.

The Legislature of 1916 placed at the disposal of the State Board of Agriculture a sum not exceeding \$5,000 annually for three years, to be expended in the encouragement of practical dairying and the production of milk and dairy products of superior cleanliness, and in developing the live-stock industry of the State.

For several years we have conducted clean milking and other contests. We now propose to encourage the rearing of grade heifers from good milking strains of dairy animals.

For best heifers sired by pure-bred Ayrshire, Brown Swiss, Guernsey, Holstein-Friesian, Jersey or Shorthorn bulls, and from high-producing grade dams of any breed, heifers to be born between April 1, 1917, and July 31, 1918, inclusive, prizes aggregating \$3,000 are offered.

Class.		First Prize.	Second Prize.	Third Prize.	Fourth Prize.	Fifth Prize.	Sixth Prize.	Seventh Prize.	Eighth Prize.
I.	Best 6 grade Ayrshire heifers, . . .	\$60	\$50	\$40	\$35	\$30	\$25	\$20	\$10
II.	Best 6 grade Brown Swiss heifers, . . .	60	50	40	35	30	25	20	10
III.	Best 6 grade Guernsey heifers, . . .	60	50	40	35	30	25	20	10
IV.	Best 6 grade Holstein-Friesian heifers, . . .	60	50	40	35	30	25	20	10
V.	Best 6 grade Jersey heifers, . . .	60	50	40	35	30	25	20	10
VI.	Best 6 grade Shorthorn heifers, . . .	60	50	40	35	30	25	20	10
VII.	Best 3 grade Ayrshire heifers, . . .	35	30	25	20	15	13	10	7
VIII.	Best 3 grade Brown Swiss heifers, . . .	35	30	25	20	15	13	10	7
IX.	Best 3 grade Guernsey heifers, . . .	35	30	25	20	15	13	10	7
X.	Best 3 grade Holstein-Friesian heifers, . . .	35	30	25	20	15	13	10	7
XI.	Best 3 grade Jersey heifers, . . .	35	30	25	20	15	13	10	7
XII.	Best 3 grade Shorthorn heifers, . . .	35	30	25	20	15	13	10	7
XIII.	Best single grade Ayrshire heifer, . . .	15	14	12	10	9	6	5	4
XIV.	Best single grade Brown Swiss heifer, . . .	15	14	12	10	9	6	5	4
XV.	Best single grade Guernsey heifer, . . .	15	14	12	10	9	6	5	4
XVI.	Best single grade Holstein-Friesian heifer, . . .	15	14	12	10	9	6	5	4
XVII.	Best single grade Jersey heifer, . . .	15	14	12	10	9	6	5	4
XVIII.	Best single grade Shorthorn heifer, . . .	15	14	12	10	9	6	5	4

GRATUITIES.

In meritorious instances gratuities may be recommended by the judges, and may equal but shall not exceed the amount offered as the eighth prize in each class, and the payment of such gratuities will depend upon money made available as unused prize money.

RULES.

1. These prizes are open for contest only for animals owned by practical dairy farmers who superintend their own dairies and gain their principal livelihood from their farm, and for animals owned by wives, sons or unmarried daughters of such eligible farmers, provided their animals are kept upon said farm and the owners live upon said farm and are mainly dependent on the farm for a livelihood.

2. All heifers eligible for entry must have been sired by pure-bred bulls which are either registered or eligible for registry. Satisfactory proof must be furnished in each instance. In case of registered bulls the certificate of registry will be accepted. In case of pure-bred bulls eligible for registry satisfactory affidavits must be filed at the time of entry.

3. All animals must have been bred and raised by the exhibitor.

4. No animal will be eligible in more than one class.

5. All entries must be made on or before July 31, 1918.

6. All animals must be exhibited at the 1918 annual exhibition of an agricultural society receiving bounty from the State, or such other place as shall be approved by the Dairy Bureau of the State Board of Agriculture, and the exhibit may be made at the society's grounds or approved place most convenient for the exhibitor.

7. Animals will be scored and judged by competent experts, and the decision of these judges shall be final.

8. No prize shall be allowed for unmeritorious animals.

9. The right to reject or cancel any and all entries is reserved by the Dairy Bureau.

10. Results will be announced as soon as possible after the close of the contest.

11. A certificate of award will accompany each cash prize.

CONDENSED MILK.

The reports of the Boston Chamber of Commerce show that the amount of condensed milk handled in Boston in 1917 was 50,337 barrels and 880,072 cases. This shows an increase over 1916 of 47,392 barrels and 117,626 cases. (See table on page 134.)

OLEOMARGARINE.

The United States licenses for the sale of oleomargarine in force in Massachusetts November 30, 1917, were: manufacturers, 3; wholesale dealers, 73; and retail dealers, 3,078; making a total of 3,154, or more than three times the number (916) reported for November, 1916. The manufacturers are as follows: Swift & Co., Gore Street, East Cambridge; Sam C.

Smith, 179 Dale Street, Waltham; and Sweet Nut Butter Company, rear of 159 Green Street, Jamaica Plain. An oleomargarine made of vegetable oils churned in milk has come upon the market in considerable quantities during the year.

The number of packages handled in Boston in 1916 as reported by the Chamber of Commerce was 40,998, and in 1917, 75,662, an increase of 34,664 packages.

For the year ending June 30, 1917, there has been a total increase in the production of oleomargarine in the United States of 80,660,198 pounds over that of the year ending June 30, 1916. This increase in the manufacture of oleomargarine is caused by a slightly increased export demand, by the increased price of butter, and by the boost given consumption by government propaganda and household economics teachings. (See table on page 132.)

RENOVATED BUTTER.

There were 27,507,982 pounds of renovated butter produced in the United States in 1917, while in 1916 there were 34,514,527 pounds, showing a decrease of 7,006,545 pounds. The high-water mark in renovated butter production, 62,965,613 pounds, was reached in 1907. Since that date there has been a general though not constant decline in the manufacture of this product. (See table on page 133.)

BUTTER.

The average wholesale price of butter in Boston market for 1917, according to the Chamber of Commerce figures, was 41.5 cents, while in 1916 it was 33.7 cents, showing an increase of 7.8 cents.

The consumption of butter, Boston output, for 1916 was 79,279,456 pounds, and for 1917, 69,665,081 pounds, showing a decrease of 9,614,375 pounds, due in part to the high price of butter, but in our judgment due still more to increased sales of oleomargarine. This situation is unfortunate for consumers, especially those with children, for the growth-promoting factors present in butter do not exist in any like degree in oleomargarine. (See tables on pages 133 and 134.)

LOCAL MILK INSPECTORS.

A list of the local inspectors of milk in the State will be found on page 141 of this report. The Bureau acknowledges its indebtedness to, and appreciation for the assistance and hearty co-operation of, these local inspectors.

PERSONNEL OF THE BUREAU.

The personnel of the Bureau remains unchanged, and is as follows: Omer E. Bradway of Monson, chairman, George W. Trull of Tewksbury and George E. Taylor, Jr., of Shelburne. The executive force, agents, analysts, etc., are as follows: executive officer and secretary, Wilfrid Wheeler; general agent, P. M. Harwood; analysts, B. F. Davenport, M.D., Boston, and Gilbert L. Clark, Emerson Laboratory, Springfield; agent, A. W. Lombard; and five temporary agents have been employed.

SUMMARY OF POLICE WORK.

Total number of inspections,	6,540 ¹
Number of inspections where no samples were taken,	5,376
Number of samples of butter, oleomargarine and renovated butter, all purchased,	1,135
Number of samples of milk and cream,	95
Cases entered in court,	93
Convictions,	93

Cases prosecuted during the twelve months ending November 30, 1917, are summarized as follows:—

¹ There were 66 extra samples taken during the year, therefore this number is 66 less than the sum of the next three items.

CITY OR TOWN.	Where tried.	Month.	Num-ber.	Law violated.	Con-vic-tions.
Lynn, . .	Lynn, . .	December, .	4	4 oleomargarine, . .	4
Peabody, . .	Peabody, . .	December, .	5	2 renovated butter, 3 oleo- margarine.	5
Lowell, . .	Lowell, . .	January, .	4	4 renovated butter, . .	4
Brockton, . .	Brockton, . .	January, .	2	2 renovated butter, . .	2
Taunton, . .	Taunton, . .	February, .	1	1 milk,	1
Ipswich, . .	Ipswich, . .	February, .	2	2 renovated butter, . .	2
Lowell, . .	Lowell, . .	February, .	2	2 renovated butter, . .	2
Lawrence, . .	Lawrence, . .	February, .	2	2 oleomargarine, . .	2
New Braintree, .	Barre, . .	February, .	1	1 milk,	1
Wareham, . .	Wareham, . .	March, .	2	2 renovated butter, . .	2
Holyoke, . .	Holyoke, . .	March, .	4	2 renovated butter, 2 oleo- margarine.	4
Hudson, . .	Hudson, . .	April, .	2	2 renovated butter, . .	2
Worcester, . .	Worcester, . .	April, .	19	4 renovated butter, 15 oleo- margarine.	19
Spencer, . .	East Brookfield, .	April, .	6	4 renovated butter, 2 oleo- margarine.	6
Worcester, . .	Worcester, . .	April, .	2	2 oleomargarine, . .	2
Webster, . .	Webster, . .	April, .	4	4 renovated butter, . .	4
Hubbardston, . .	Gardner, . .	April, .	2	2 milk,	2
Norwood, . .	Dedham, . .	April, .	2	2 renovated butter, . .	2
Worcester, . .	Worcester, . .	May, .	2	2 oleomargarine, . .	2
Southbridge, . .	Southbridge, . .	May, .	4	4 renovated butter, . .	4
Athol, . .	Athol, . .	May, .	2	2 oleomargarine, . .	2
Fitchburg, . .	Fitchburg, . .	May, .	6	6 oleomargarine, . .	6
Everett, . .	Malden, . .	May, .	1	1 renovated butter, . .	1
Worcester, . .	Worcester, . .	June, .	2	2 oleomargarine, . .	2
Quincy, . .	Quincy, . .	June, .	5	4 oleomargarine, 1 reno- vated butter.	5
Cambridge, . .	Cambridge, . .	June, .	2	2 renovated butter, . .	2
Natick, . .	Natick, . .	June, .	2	2 renovated butter, . .	2
Brockton, . .	Brockton, . .	June, .	1	1 renovated butter, . .	1
Totals, . .	. . . . .	. . . . .	93	. . . . .	93

The charges in the several cases entered in court for the year ending November 30, 1917, have been as follows:—

Selling renovated butter in unmarked packages,	49
Furnishing oleomargarine in restaurants, etc., without notice to guests,	33
Selling oleomargarine in unmarked packages,	6
Selling oleomargarine without registering with local milk inspector, . .	1
Selling adulterated milk,	4

The following table shows the inspections without samples and the number of samples taken during the past fifteen years:—

YEARS.	Inspections without Samples.	Samples.
1903-16 (inclusive),	77,901	22,348
1917,	5,376	1,164
Total for fifteen years,	83,277	23,512
Average,	5,551	1,567

OLEOMARGARINE.

The following figures, taken from the annual report of the United States Commissioner of Internal Revenue for 1917, show the production, withdrawn tax paid, withdrawn for export, and withdrawn for use of the United States, of the two classes of oleomargarine, as defined by act of May 9, 1902, covering the period of fifteen years since it went into effect, July 1, 1902:—

Oleomargarine (Pounds).

YEAR.	PRODUCT TAXED AT RATE OF 10 CENTS PER POUND.				PRODUCT TAXED AT RATE OF ¼ CENT PER POUND.			
	Pro- duced.	With- drawn Tax paid.	With- drawn for Export.	With- drawn Free of Tax for Use of the United States.	Pro- duced.	With- drawn Tax paid.	With- drawn for Export.	With- drawn Free of Tax for Use of the United States.
1903, . . .	5,710,407	2,312,493	3,334,969	—	67,573,689	66,785,796	151,693	—
1904, . . .	3,785,670	1,297,068	2,504,940	—	46,413,972	46,397,984	123,425	—
1905, . . .	5,560,304	3,121,640	2,405,763	—	46,427,032	46,223,691	137,670	—
1906, . . .	4,888,986	2,503,095	2,422,320	—	50,545,914	50,536,466	78,750	—
1907, . . .	7,758,529	5,009,094	2,695,276	—	63,608,246	63,303,016	129,350	—
1908, . . .	7,452,800	4,982,029	2,522,188	—	74,072,800	73,916,869	109,480	—
1909, . . .	5,710,301	3,275,968	2,493,742	—	86,572,514	86,221,310	112,958	—
1910, . . .	6,176,991	3,416,286	2,767,195	—	135,685,289	135,159,429	97,575	—
1911, . . .	5,830,995	2,764,971	3,054,344	—	115,331,800	115,448,006	91,750	—
1912, . . .	6,235,639	3,174,331	3,044,122	—	122,365,414	121,945,038	106,160	—
1913, . . .	6,520,436	4,090,658	2,417,973	3,300	138,707,426	138,242,848	59,686	—
1914, . . .	6,384,222	3,831,706	2,121,162	469,310	137,637,054	137,747,982	22,540	110,020
1915, . . .	7,595,141	3,753,012	3,081,356	731,030	138,214,907	137,693,610	31,172	—
1916, . . .	6,748,940	3,403,287	2,561,613	746,281	145,760,973	145,443,578	26,076	2,250
1917, . . .	8,012,031	4,476,351	2,752,431	723,248	225,158,080	224,047,821	141,835	2,400
Total, . .	94,371,392	51,411,989	40,089,394	2,676,199	1,594,075,110	1,589,113,444	1,420,120	114,670

RENOVATED BUTTER.

The following figures, from the same source as the preceding table, show the production and withdrawn tax paid of renovated butter, 1903-17:—

Renovated Butter (Pounds).

YEAR.	Production.	Withdrawn Tax paid.
1903,	54,658,790	54,223,234
1904,	54,171,183	54,204,478
1905,	60,029,421	60,171,504
1906,	53,549,900	53,361,088
1907,	62,965,613	63,078,504
1908,	50,479,489	50,411,446
1909,	47,345,361	47,402,382
1910,	47,433,575	47,378,446
1911,	39,292,591	39,352,445
1912,	46,387,398	46,413,895
1913,	38,354,762	38,285,114
1914,	32,470,030	32,513,244
1915,	39,056,180	38,924,828
1916,	34,514,527	34,572,335
1917,	27,507,982	27,649,487
Total,	688,216,802	687,942,430

BUTTER.

The following table shows average quotations for the best fresh creamery butter, in a strictly wholesale way, in the Boston market for the last ten years, as compiled by the Boston Chamber of Commerce:—

MONTHS.	1917. Cents.	1916. Cents.	1915. Cents.	1914. Cents.	1913. Cents.	1912. Cents.	1911. Cents.	1910. Cents.	1909. Cents.	1908. Cents.
January, . . .	38.3	32.0	32.5	32.5	33.9	36.9	28.8	33.5	30.9	29.7
February, . . .	39.2	32.0	31.1	28.8	34.9	32.5	26.9	30.5	30.0	32.1
March, . . .	39.7	34.5	30.3	27.7	36.4	32.1	24.2	32.0	29.1	30.2
April, . . .	44.2	35.9	30.1	25.1	34.5	32.7	21.7	31.5	27.9	28.4
May, . . .	40.5	35.4	28.7	25.8	28.7	30.4	22.8	29.0	26.6	24.1
June, . . .	39.1	29.7	28.5	27.5	28.2	27.9	24.2	28.2	26.4	24.5
July, . . .	39.1	29.0	27.3	27.9	27.5	28.1	26.0	28.6	27.2	23.6
August, . . .	41.2	31.2	26.0	30.1	28.2	27.1	27.2	29.6	28.2	24.5
September, . . .	44.4	33.6	27.1	30.9	31.3	29.1	27.7	29.6	31.3	25.3
October, . . .	44.4	35.1	28.5	30.9	31.2	31.0	30.4	29.4	31.7	27.5
November, . . .	43.6	37.6	29.1	32.4	31.9	32.9	32.5	30.2	31.4	29.5
December, . . .	45.4	38.5	31.2	32.7	33.8	34.0	35.0	30.0	32.9	31.0
Averages, . . .	41.5	33.7	29.2	29.4	31.7	31.2	27.3	30.2	29.5	27.5

The Chamber of Commerce figures regarding the butter business in Boston for 1916 and 1917 are as follows:—

	1917. Pounds.	1916. Pounds.
Carried over in storage,	8,447,036	9,119,100
Receipts for January,	2,834,914	2,848,659
February,	3,808,405	3,769,297
March,	3,543,043	2,911,830
April,	4,515,853	4,052,249
May,	5,512,020	8,863,803
June,	11,753,491	16,361,341
July,	12,041,303	13,375,446
August,	7,891,006	9,680,632
September,	5,559,546	6,629,484
October,	5,530,601	5,188,022
November,	3,263,422	3,148,953
December,	2,913,964	2,475,818
Total supply,	77,614,604	88,424,634
Exports for year, deduct,	5,555	698,142
Net supply,	77,609,049	87,726,492
Storage stock ¹ December 31, deduct,	7,943,968	8,447,036
Consumption for year,	69,665,081	79,279,456

¹ Stock of Terminal Refrigerating Company not included.

RECEIPTS OF CONDENSED MILK.

The Chamber of Commerce figures regarding the receipts of condensed milk at Boston for 1916 and 1917 are as follows:—

	1917.		1916.	
	Barrels.	Cases.	Barrels.	Cases.
January,	201	45,262	102	28,588
February,	280	51,867	71	36,339
March,	586	78,249	130	52,484
April,	617	99,175	233	46,987
May,	1,030	39,733	342	124,630
June,	5,630	53,913	998	113,489
July,	6,179	81,312	304	70,044
August,	4,180	84,261	53	70,780
September,	19,868	151,393	125	79,595
October,	4,136	84,522	49	68,745
November,	7,316	58,592	465	44,145
December,	314	51,793	73	26,620
Totals,	50,337	880,072	2,945	762,446

MILK.

Milk brought into Boston by Different Railroads, December 1, 1916, to November 30, 1917, as reported by the Public Service Commissioners (Quarts).

DATE.	Boston & Albany.	Boston & Maine.	New York, New Haven & Hartford.	Totals.
1916.				
December,	612,666	9,530,328	2,006,657	12,149,651
1917.				
January,	262,634	8,663,360	2,141,993	11,067,987
February,	359,918 $\frac{1}{4}$	7,871,878	1,938,823	10,170,619 $\frac{1}{4}$
March,	504,508	9,756,528	2,100,416	12,361,452
April,	591,100	9,034,744	2,209,846	11,835,690
May,	574,316	9,789,987	1,991,152	12,355,455
June,	671,883	10,688,754	2,115,703	13,476,340
July,	698,088 $\frac{1}{2}$	11,086,532	1,910,079	13,694,699 $\frac{1}{2}$
August,	479,442 $\frac{1}{4}$	10,803,754	1,680,669	12,963,865 $\frac{1}{4}$
September,	680,751	8,804,196	1,426,987	10,911,934
October,	830,722	8,720,943	1,573,222	11,124,887
November,	843,000	7,999,098	1,519,686	10,361,784
Totals,	7,109,029	112,750,102	22,615,233	142,474,364

Milk brought into Boston annually by Railroads for the Years ending November 30, 1906, to November 30, 1917, inclusive (Quarts).

1906,	114,233,967
1907,	109,882,190 $\frac{1}{2}$
1908,	103,831,278 $\frac{1}{2}$
1909,	108,082,936
1910,	100,606,362 $\frac{1}{2}$
1911,	90,092,772
1912,	104,019,234
1913,	107,306,849
1914,	103,638,225
1915,	109,507,950 $\frac{3}{4}$
1916,	118,516,214 $\frac{3}{4}$
1917,	142,474,364

Comparative List of Number of Cows assessed in Massachusetts May 1, 1906, April 1, 1915, April 1, 1916, and April 1, 1917.

COUNTIES.	1906.	1915.	1916.	1917.	DECREASE.		INCREASE.	
					1906-17.	1916-17.	1906-17.	1916-17.
Barnstable, . . .	2,448	2,249	2,200	2,288	160	-	-	88
Berkshire, . . .	17,404	14,113	14,509	15,126	2,278	-	-	617
Bristol, . . .	13,702	12,447	13,477	13,743	-	-	41	266
Dukes, . . .	656	637	681	717	-	-	61	36
Essex, . . .	17,131	12,776	12,573	12,751	4,380	-	-	178
Franklin, . . .	12,715	10,382	10,757	10,772	1,943	-	-	15
Hampden, . . .	12,096	9,302	9,118	9,289	2,807	-	-	171
Hampshire, . . .	14,383	11,433	11,585	11,645	2,738	-	-	60
Middlesex, . . .	29,508	22,892	23,800	23,484	6,024	316	-	-
Nantucket, . . .	378	420	359	386	-	-	8	27
Norfolk, . . .	11,200	9,235	9,246	8,960	2,240	286	-	-
Plymouth, . . .	8,465	7,477	7,663	7,765	700	-	-	102
Suffolk, . . .	1,186	837	812	631	555	181	-	-
Worcester, . . .	40,544	30,816	30,854	31,520	9,024	-	-	666
Massachusetts,	181,816	145,016	147,634	149,077	32,849	783	108	2,289

Net increase for State, 1916-17, 1,443.

List of Massachusetts Farms making Milk of Superior Quality and Cleanliness and selling their Product higher than the Regular Market Price.

LOCATION, NAME.	Owner and Manager.	Approximate Number of Cows.	Where marketed.
Acushnet, White's farm, . . .	Walter A. White, owner and manager.	20	New Bedford.
Agawam, Elm Shade Dairy, . . .	S. S. and E. F. Bodurtha, owners and managers.	25	Springfield.
Andover, Arden Farm, . . .	Wm. M. Wood, owner; J. M. Putnam, superintendent; Austin C. Huggins, manager of creamery.	55	Andover, Lawrence, Woburn and Boston.
Arlington, L. M. Dolloff's Farm, .	L. M. Dolloff, owner and manager.	8	Arlington.
Ashland, H. W. Chadbourne's farm,	H. W. Chadbourne, owner and manager.	50	Brookline, Newton and Boston.
Barnstable, Bay Farm, . . .	H. C. Everett, owner and manager.	-	Barnstable.
Barre, Highland View Farm, . . .	D. A. Howe, owner; W. E. Howe, manager.	25	Worcester.
Beverly, Bull Rush Farm, . . .	George R. Wales, owner and manager.	26	Beverly.
Beverly, Cherry Hill Farm, . . .	H. P. Hood & Sons, . . .	156	Brookline and Boston.

List of Massachusetts Farms making Milk of Superior Quality and Cleanliness and selling their Product higher than the Regular Market Price — Continued.

LOCATION, NAME.	Owner and Manager.	Approximate Number of Cows.	Where marketed.
Bolton, Wataquodock Farm, . . .	Paul Cunningham, owner and manager.	35	Boston and vicinity, by Alden Brothers Company.
Braintree, F. H. Sanford's farm, . .	F. H. Sanford, owner and manager.	20	Braintree.
Charles River, Needham, Walker-Gordon Farm.	Walker-Gordon Laboratory Company, owner; John Nichols, manager.	150	Boston and vicinity.
Chilmark (West Tisbury P. O.), Oakview Farm.	J. F. Adams, owner and manager.	17	Vineyard Haven and Edgartown.
Dorchester, Codman Farm, . . .	Watson B. Fearing, owner and manager.	158	Boston.
East Longmeadow, Peter Kronvall Farm.	Mrs. Peter Kronvall, manager.	8	Springfield.
East Walpole,	Geo. A. Plympton, owner; Eben Voorhees, manager.	100	Boston and vicinity, by Elm Farm Milk Company.
Egypt,	P. J. Robinson, owner and manager.	8	Scituate.
Fairhaven, Dana Farm,	Eliza N. and Edith Dana, owners and managers.	52	Fairhaven, Marion and Mattapoisett (in summer).
Fairhaven, Lewis F. Blossom's farm,	Lewis F. Blossom, owner and manager.	12	Fairhaven.
Framingham, Millwood Farm, . .	Mrs. E. F. Bowditch, owner; J. P. Bowditch, manager; F. E. Barrett, superintendent.	300	Boston and Wellesley.
Framingham, Waveney Farm, . .	Reginald W. Bird, owner; A. E. White, manager.	50	Boston, by Alden Brothers Company.
Framingham, Cherry Meadow Farm.	D. M. and E. F. Belches, owners; E. F. Belches, manager.	20	Framingham.
Franklin, Ray Farm,	E. K. Ray estate, owner; Joseph G. Ray, trustee and manager.	100	Boston, by Elm Farm Milk Company.
Gardner, Heywood Farm,	Miss Helen Heywood, owner; Joseph G. Ray, trustee and manager.	40	Gardner.
Gloucester,	E. W. Babson, owner and manager.	25	Gloucester.
Gloucester,	L. Friend, Jr., owner and manager.	20	Gloucester.
Gloucester, Peter Hagstrom's farm,	Peter Hagstrom, owner and manager.	18	Gloucester.
Gloucester,	T. F. Kerr, owner and manager.	30	Gloucester.
Gloucester, H. Wallace Lane's farm,	H. Wallace Lane, owner and manager.	65	Gloucester.
Great Barrington, Lone Pine Farm,	W. B. Nisbet, owner; Michael Conden, manager.	15	Great Barrington.
Greenfield, Wayside Farm, . . .	Frank H. Reed, owner; Mr. Purrington, manager.	25	Greenfield.
Hardwick, Mixer Farm,	Mary A. Mixer, owner; Dr. Samuel J. Mixer, manager; J. S. Clark, superintendent.	200	Boston.
Haverhill (Bradford District), J. B. Sawyer's farm.	J. B. Sawyer, owner and manager.	-	Haverhill.
Haverhill (P. O. East Haverhill), Fred Kimball's farm.	Fred Kimball, owner; Leonard Kimball, manager.	50	Haverhill.
Haverhill, North Broadway Milk Farm.	E. A. Emerson, owner and manager.	40	Haverhill.

List of Massachusetts Farms making Milk of Superior Quality and Cleanliness and selling their Product higher than the Regular Market Price — Continued.

LOCATION, NAME.	Owner and Manager.	Approximate Number of Cows.	Where marketed.
Holliston,	S. H. Fessenden, owner, .	40	Boston and Brookline.
Ipswich, Upland Farm,	F. P. Frazier & Son, owner; Benj. F. Barnes, manager.	100	Boston, Manchester, Magnolia and Beverly Farms.
Kingston, Miss Helen Holmes' farm,	Miss Helen Holmes, owner and manager.	20	Kingston.
Lee, John Goodrich's farm, . . .	John Goodrich, owner and manager.	40	Lee.
Lexington, Greenfield Farm, . . .	H. Swenson, owner and manager.	106	Arlington, Lexington and Somerville.
Lexington, Hatch Farm,	George C. Hatch, owner and manager.	26	Lexington and Arlington.
Lexington, Kelsey Ranch,	Harry S. Kelsey, owner; S. H. Parks, superintendent.	65	Boston.
Lexington, Reed Farm,	Frank H. Reed, owner and manager.	30	Lexington and Arlington.
Lincoln,	William J. DeNormandie, owner and manager.	12	Boston.
Lowell, Hood Farm,	C. I. Hood, owner; J. E. Dodge, manager.	135	Lowell.
Lunenburg, Clover Hill Farm, . . .	W. J. Fish, owner and manager.	60	Fitchburg.
Lunenburg, Sunnyside Farm, . . .	George M. Proctor, owner; Fred A. Miller, manager.	48	Fitchburg.
Lynnfield, N. F. McCarthy's farm,	N. F. McCarthy, owner; Eben Holmes, manager.	30	Wakefield.
Marlborough, Fairview Farm, . . .	Elmer D. Howe & Son, owners and managers.	10	Marlborough.
Medford, Mystic Valley Farm, . . .	John J. Mulkerin, owner and manager.	18	Medford.
Methuen, Cox Farms,	Louis Cox, owner; L. Coburn, manager.	31	Lawrence.
Millis, Lowland Farm,	E. F. Richardson, owner and manager.	25	Boston.
Milton, Highland Farm,	Patriquin & Newton, lessees; George Patriquin, manager.	65	Milton.
Milton, Home Farm,	Helen Hall, owner and manager.	40	Milton.
Milton, Parker Farm,	S. D. Sanson, owner and manager.	30	Milton.
Needham, K. E. Webb's farm, . . .	Kenneth E. Webb, owner and manager.	31	Needham.
Newton (P. O. Waban), W. B. McMullin's farm.	William B. McMullin, owner and manager.	17	Needham and Newton.
Newtonville, Willow Farm,	D. F. Smith, owner and manager.	60	Newton, Brookline and Boston.
Norfolk, Meadowside Farm,	T. D. Cook & Co., owners and managers.	35	Boston.
Northampton (Florence) Strawberry Hill Farm.	Mrs. E. K. Learned, owner; Wilfred H. Learned, manager.	12	Northampton.
North Falmouth, Manuel G. White's farm.	Manuel G. White, owner and manager.	6	North Falmouth.
North Grafton, Bonnybrook Farm,	Everett N. Kearney, owner and manager.	60	Worcester.
North Tewksbury, Mountjoy, . . .	Miss Florence Nesmith, owner; C. E. Lougee, manager.	50	North Tewksbury.
Oak Bluffs, Woodsedge Farm, . . .	F. W. Chase, owner and manager.	20	Oak Bluffs.
Paxton, Echo Farm,	W. J. Woods, owner; Joseph Graham, manager.	40	Worcester, by C. Brigham Company.
Peabody, Brooksby Farm,	Mrs. Wm. A. Smith, owner and manager.	30	Salem.

List of Massachusetts Farms making Milk of Superior Quality and Cleanliness and selling their Product higher than the Regular Market Price — Concluded.

LOCATION, NAME.	Owner and Manager.	Approximate Number of Cows.	Where marketed.
Peabody, J. C. Rogers' farm, . . .	George H. Simpkins, owner and manager.	30	Salem and Peabody.
Pepperell, George Shattuck's farm, . . .	George Shattuck, owner and manager.	75	Boston and vicinity, by D. Whiting & Sons.
Saugus, Oaklandvale Farm, . . .	Frank P. Bennett, owner and manager.	112	Lynn.
Sherborn, H. N. Brown's farm, . . .	H. N. Brown, owner and manager.	40	Boston.
Sherborn, Dexter Farm, . . .	George T. Dexter, owner and manager.	23	Boston and vicinity, by Alden Brothers Company.
Sherborn, J. M. Merriam's farm, . . .	J. M. Merriam, owner and manager.	40	Boston.
Southborough, Deerfoot Farm, . . .	Robt. M. Burnett, owner and manager.	150	Boston, Cambridge and Brookline.
Southborough, . . .	Thomas P. Lindsey, owner and manager.	6	Southborough.
South Lincoln, . . .	A. H. Higginson, owner; Wm. R. Coutts, manager.	20	Boston and vicinity.
South Lincoln, South Lincoln Dairy Company.	South Lincoln Dairy Company, owner; W. A. Blodgett, manager.	100	Boston, Cambridge and Brookline.
South Natick, Carver Hill Farm, . . .	Carver Hill Farms, Inc., owners; Austin Potter, manager.	100	Wellesley, Boston, Natick, Needham, Brookline and Dover.
South Sudbury, Bonnie Brook Farms.	Norman E. Borden, owner; E. T. Clark, manager.	100	Boston and vicinity.
Southville, Waumesit Farm, . . .	R. F. Parker, owner and manager.	20	Boston and vicinity, by C. Brigham Company.
Stoneham, Valley Farm, . . .	John P. Hylan, owner and manager.	12	Stoneham.
Templeton, Dolbear Hill Farm, . . .	Harvey O. Winch, owner and manager.	25	Gardner.
Waltham, Pleasantdale Farm, . . .	C. V. Hubbard, owner and manager.	35	Weston.
Warren, Maple Farm, . . .	J. R. Blair, owner and manager.	48	Boston and Brookline.
Wayland, Loring Estate, . . .	- - -	40	Brookline and Boston.
Wayland, Perkins' Estate, . . .	S. N. Sanders, manager, .	12	Waltham.
Wayland, Isaac Sears farm, . . .	Isaac Sears, owner and manager.	110	Boston and Brookline.
Westfield, Woronoak Farm, . . .	Edgar L. Gillett, owner; N. J. Weidhass, manager.	51	Westfield.
West Newbury, . . .	Albert Elwell, owner and manager.	18	Beverly.
West Newton and Barre, Wauwinet Farm.	George H. Ellis, owner; P. F. Staples and R. F. Handy, managers.	350	Boston, Brookline and Newton.
Weston, Ferndale, . . .	Frank H. Pope, owner and manager.	70	Weston and Newton.
West Peabody, Crystal Lake Farm, . . .	John L. Carten, owner and manager.	40	Salem and Peabody.
Westwood, Fox Hill Farm, . . .	Joshua Crane, owner; Dr. A. W. Gorham, manager.	132	Boston.
Winchendon, . . .	C. Bertram Epps, owner and manager.	10	Winchendon.
Worcester, Intervale Farm, . . .	J. Lewis Ellsworth, owner and manager.	14	Worcester.
Worcester, Lewis J. Kendall's farm, . . .	Lewis J. Kendall, owner and manager.	40	Worcester.

List of Massachusetts Dairy Farms making Certified Milk.

LOCATION, NAME.	Owner and Manager.	Certified by —	Approximate Number of Cows.	Where marketed.
Amherst, Massachusetts Agricultural College Farm.	Massachusetts Agricultural College; J. A. Foord, manager.	Medical Milk Commission of Boston.	65	Boston.
Beverly, Cherry Hill Farm,	H. P. Hood & Sons, owners; O. H. Perrin, manager.	Medical Milk Commission of Boston.	300	Boston, North Shore and Lawrence.
Brookfield, Gilbert Farms,	A. W. Gilbert, owner and manager,	Medical Milk Commission of Springfield.	25	Springfield.
Coliasset, the Oaks Farm,	C. W. Barron, owner; W. S. Kerr, manager.	Medical Milk Commission of Coliasset.	100	Coliasset, Brookline and Boston.
Dartmouth (P. O. North Dartmouth), Marriano Farm.	Oliver Prescott, owner; H. W. Martin, manager.	Medical Milk Commission of New Bedford.	26	New Bedford.
North Reading, Ledyard Farm,	J. A. and W. H. Gould, owners; Wm. Perry, manager.	Medical Milk Commission of Malden.	50	Malden, Melrose, Wakefield and Everett.
North Tisbury, Seven Gates Farm,	W. F. Webb, owner; O. L. Curtis, manager.	Medical Milk Commission of West Tisbury, Inc.	25	Marlhus Vineyard.
South Dartmouth, Birchfield Farm,	Lawrence Grinnell, owner and manager,	Medical Milk Commission of New Bedford.	38	New Bedford.
Waltham, Cedar Crest Farm,	John C. Runkle, owner; Louis W. Dean, manager.	Medical Milk Commission of New Bedford.	90	North Shore, Cambridge and Boston.
Waltham, Cedar Hill Farm,	Miss Cornelia Warren, owner; Chas. Cahill, manager.	Medical Milk Commission of Cambridge.	130	Waltham, Cambridge and Boston.
Wayland, Indian,	Edmund H. Sears, owner; W. J. Jauncey, Jr., manager.	Medical Milk Commission of Cambridge.	16	Waltham.

LIST OF LOCAL MILK INSPECTORS.

Milk Inspectors for Cities and Towns.

Adams,	Dr. A. G. Potter.
Amesbury,	James L. Stewart.
Amherst,	P. H. Smith.
Andover,	Franklin H. Stacey.
Arlington,	A. W. Lombard.
Ashburnham,	James F. Hare.
Ashland,	Ralph W. Bell.
Athol,	John H. Meany, V.S.
Attleboro,	Solomon Fine.
Avon,	R. A. Elliott, M.D.
Barnstable,	George T. Mecarta.
Bedford,	Dr. Immanuel Pfeiffer.
Bellingham,	Dr. Norman P. Quint, West Medway.
Belmont,	Thomas F. Harris and H. E. Berger, Wellesley.
Berkley,	Alton A. Haskell.
Bernardston,	G. P. Morton.
Beverly,	Henry E. Dodge, 2d.
Billerica,	Albert H. Jones.
Boston,	Professor James O. Jordan.
Braintree,	F. Herbert Gile, M.D.
Bridgewater,	C. F. Jordan.
Brimfield,	J. Walter Brown.
Brockton,	George E. Bolling.
Brookline,	W. E. Ward.
Cambridge,	Jeremiah S. Sullivan.
Canton,	H. E. Berger, Jr., Wellesley Hills.
Carlisle,	Benjamin F. Blaisdell.
Charlemont,	Charles E. Graves.
Charlton,	Frank Olney.
Chelsea,	Dr. W. S. Walkley.
Chicopee,	C. J. O'Brien.
Clarksburg,	Cassius Quackenbush, North Adams.
Clinton,	Gilman L. Chase, M.D.
Cohasset,	Darius W. Gilbert, V.S.
Colrain,	Earl W. Goodell, P. O. Bardwells' Ferry.
Concord,	Harry E. Tuttle.
Conway,	A. J. Patterson.
Dalton,	H. Ward Ford.
Dana,	Chas. W. Robertson, M.D., North Dana.
Danvers,	Wm. Hugo Nappe.
Dedham,	Edmand Knobel.
East Douglas,	Frank E. Correll.
Easthampton,	Julius J. Mutter.

East Longmeadow, . . .	Henry S. Ashley.
Edgartown, . . .	George N. Cleveland.
Everett, . . .	E. Clarence Colby.
Fairhaven, . . .	Andrew N. Bruckshaw, M.D.
Fall River, . . .	Henry Boisseau.
Fitchburg, . . .	John F. Bresnahan.
Framingham, . . .	Fred S. Dodson.
Franklin, . . .	Russ W. Harding.
Gardner, . . .	Harry O. Knight.
Gill, . . .	George L. Marshall.
Gloucester, . . .	Dr. G. E. Watson.
Gosnold, . . .	John T. Cornell, Cuttyhunk.
Granville, . . .	Laurence F. Henry.
Great Barrington, . . .	Dewitt Smith.
Greenfield, . . .	George P. Moore.
Groton, . . .	Herbert Rockwood.
Hadley, . . .	Henry S. Shipman.
Hamilton, . . .	Dr. C. S. Moore.
Harwich, . . .	Charles H. Taylor.
Haverhill, . . .	Dr. Charlemagne Briault, Acting Inspector.
Hingham, . . .	Charles H. Marble.
Hinsdale, . . .	Alfred N. Warren.
Holyoke, . . .	Daniel P. Hartnett.
Housatonic, . . .	J. J. Barr.
Hudson, . . .	Raymond Coolidge.
Hull, . . .	Carroll A. Cleverly.
Ipswich, . . .	George W. Smith.
Lancaster, . . .	George E. Howe.
Lawrence, . . .	Dr. J. H. Tobin.
Lenox, . . .	James A. Farrington.
Leominster, . . .	William H. Dodge.
Lexington, . . .	Andrew Bain, Arlington.
Littleton, . . .	N. B. Conant.
Lowell, . . .	Melvin F. Master.
Ludlow, . . .	A. L. Bennett, D.V.S.
Lunenburg, . . .	Dr. Charles E. Woods.
Lynn, . . .	George A. Flanagan.
Lynnfield, . . .	Franklin W. Freeman.
Malden, . . .	J. A. Sanford.
Mansfield, ¹ . . .	- -
Marblehead, . . .	Andrew M. Stone.
Marlborough, . . .	John J. Cassidy.
Marion, . . .	Chester A. Vose.
Medford, . . .	Winslow Joyce.
Medway, . . .	Norman P. Quint, West Medway.
Melrose, . . .	H. E. Berger, Jr., Wellesley Hills.

¹ Milk samples taken to Attleboro for inspection.

Middleborough,	J. H. Wheeler.
Milton,	Wallace C. Tucker.
Millbury,	Fred A. Watkins.
Monson,	Dr. E. W. Capen.
Montague,	Henry E. Tucker, Turners Falls..
Monterey,	F. A. Campbell.
Nahant,	Robert L. Cochrane.
Natick,	Thomas A. Doyle, D.V.M.
Needham,	H. E. Berger, Jr., Wellesley Hills.
New Bedford,	Herbert Hamilton, D.V.S.
Newburyport,	Dr. R. D. Hamilton.
Newton,	Arthur Hudson.
North Adams,	C. T. Quackenbush.
Northampton,	George R. Turner.
North Attleborough,	Hugh Gaw, D.V.S.
Northborough,	Everett C. Valentine.
North Brookfield,	Dr. Windsor R. Smith.
North Dana,	Chas. W. Robertson, M.D.
Northfield,	E. C. Field, Northfield Farms.
North Reading,	J. H. Spear.
Norton,	Edmund H. Elliott, Chartley.
Oxford,	Richard C. Taft.
Palmer,	Charles H. Keith.
Paxton,	Henry H. Pike.
Peabody,	Edward F. McHugh.
Pelham,	Charles H. Jones.
Pepperell,	Dr. Fred A. Davis, East Pepperell.
Pittsfield,	Dr. Bernard M. Collins.
Plainville,	John C. Eiden.
Plymouth,	Walton E. Briggs.
Provincetown,	John Dennis.
Quincy,	James McConnell.
Reading,	Carl M. Smith.
Revere,	Joseph E. Lamb, M.D.
Russell,	G. Henry Mortimore.
Rutland,	Lewis Drury.
Salem,	John J. McGrath.
Salisbury,	John F. Pike.
Sandwich,	J. E. Holway.
Saugus,	A. W. Sawyer.
Scituate,	George T. Otis.
Shelburne,	G. J. Tower, Shelburne Falls.
Shirley,	John H. Riley.
Shrewsbury,	C. I. Rich.
Somerville,	Herbert E. Bowman.
South Hadley,	George F. Boudreau.

Southborough, . . .	Dr. John W. Robinson.
Southbridge, . . .	Albert R. Brown.
Spencer, . . .	W. J. Meloche, D.V.S.
Springfield, . . .	Stephen C. Downs, Fred L. Robertson.
Sterling, . . .	Arthur S. Wilder, Sterling Junction.
Stoneham, . . .	Lawrence E. Doucett.
Stoughton, . . .	William E. Ferrin.
Stow, . . .	Fred E. Whitcomb.
Sutton, . . .	Charles A. Hough.
Swampscott, . . .	Clarence W. Horton.
Taunton, . . .	Lewis I. Tucker.
Tisbury, . . .	Charles S. Norton, Vineyard Haven.
Topsfield, . . .	Charles S. Moore, Danvers.
Truro, . . .	Edward L. Small. ¹
Wakefield, . . .	Carl M. Smith, Reading.
Waltham, . . .	Charles M. Hennelly.
Ware, . . .	Fred E. Marsh.
Wareham, . . .	John J. Beaton.
Warren, . . .	Joseph St. George.
Warwick, . . .	Charles E. Stone.
Watertown, . . .	A. D. Hiller.
Webster, . . .	Leon A. Paquin.
Wellesley, . . .	H. E. Berger, Jr., Wellesley Hills.
Wendell, . . .	Charles A. Fiske.
Wenham, . . .	C. W. Patch.
Westborough, . . .	Charles H. Reed.
West Boylston, . . .	Dr. A. M. Tyler.
West Brookfield, . . .	John W. Houghton.
Westfield, . . .	Walter H. Jenkins.
Westford, . . .	Charles A. Wells.
Westport, . . .	George A. Tripp.
Weston, . . .	H. E. Berger, Jr., Wellesley Hills.
West Springfield, . . .	J. A. Morrill.
Weymouth, . . .	George B. Bayley, South Weymouth.
Whitman, . . .	E. A. Dyer.
Williamsburg, . . .	A. G. Cone.
Williamstown, . . .	G. S. Jordan, V.S.
Winchendon, . . .	Dr. G. W. Stanbridge.
Winchester, . . .	Maurice Dineen.
Winthrop, . . .	S. A. Mowry.
Woburn, . . .	D. F. Callahan.
Worcester, . . .	Gustaf L. Berg.

¹ Inspector of dairies.

CREAMERIES, MILK DEPOTS, ETC.

Co-operative Creameries.

NUMBER AND LOCATION.	Name.	Superintendent or Manager.
1. Ashfield,	Ashfield Creamery,	William Hunter, manager.
2. Cummington,	Cummington Creamery,	D. C. Morey, superintendent.
3. Easthampton,	Hampton Creamery,	E. B. Clapp, treasurer.
4. Monterey,	Berkshire Hills Creamery,	F. A. Campbell, treasurer.
5. Northfield,	Northfield Creamery,	C. C. Stearns, treasurer.
6. Shelburne,	Shelburne Creamery,	E. P. Andrews, treasurer.

Proprietary Creameries.

NUMBER AND LOCATION.	Name.	Owner or Manager.
1. Amherst,	Amherst Creamery Company,	R. W. Pease, manager.
2. Hinsdale,	Hinsdale Creamery,	Walter C. Solomon, proprietor.

Educational.

LOCATION.	Name.	Manager.
Amherst,	Dairy Industry Course, Massachusetts Agricultural College.	W. P. B. Lockwood, professor in charge.

Principal Milk-distributing Depots.

NAME.	Location.	Manager.
Acton Farms Milk Company, . .	Somerville, Windsor Street,	John Colgan, treasurer.
Alden Brothers Company, . .	Boston office, 1171 Tremont Street; depot, 24-28 Duncan Street.	Charles L. Alden, President; John Alden, treasurer.
Anderson Brothers,	Worcester, Eckman Street,	Anderson Brothers.
Bonnie Brook Farms,	South Sudbury,	E. T. Clark.
Mohawk Dairy Company, . .	Boston office, 1047 Kimball Building.	Claude E. Davis, treasurer.
Boston Jersey Creamery, . .	Boston, 9 Fulton Street,	Theo. P. Grant, president and manager.
Brigham, C., Company,	Cambridge, 158 Massachusetts Avenue.	John K. Whiting.
Brigham, C., Company,	Worcester, 9 Howard Street,	C. Brigham Company.
Bristol Creamery Company, . .	Boston, 132 Central Street,	William L. Johnson.
Columbia Creamery,	Springfield, 117 Lyman Street,	H. A. Mosely.

Principal Milk-distributing Depots — Concluded.

NAME.	Location.	Manager.
Deerfoot Farms Dairy, . . .	Southborough and Northborough; retail store at 172 Tremont Street, Boston.	S. H. Howes.
Dufresne Brothers, . . .	Shrewsbury Street, Shrewsbury, .	Dufresne Brothers.
Elm Farm Milk Company, . .	Boston, Wales Place, . . .	James H. Knapp, treasurer.
Elm Spring Farm, . . .	Waltham, Ellison Road, . . .	G. W. Barrow.
Franklin Creamery Company,	Boston, 147 Harrison Avenue, .	Tait Brothers.
Hampden Creamery Company,	Everett, Orient Avenue, . . .	Frank H. Adams, treasurer.
Hood, H. P., & Sons, . . .	Boston, 494 Rutherford Avenue; branches, 24 Anson Street, Forest Hills; 886 Broadway, Chelsea; 298 Dorchester Avenue, South Boston. Brookline, 133 Westbourne Terrace. Lawrence, 629 Common Street. Lynn, 193 Alley Street. Malden, 425 Main Street. Medford, 452 High Street. Watertown, 479 Pleasant Street.	Charles H. Hood.
Kingdon, Fred, . . .	Auburn,	Fred Kingdon.
Laipson Brothers, . . .	Shrewsbury Street, Worcester, .	Laipson Brothers.
Learned, G. S. (Fitchburg Creamery).	Fitchburg, 26 Cushing Street, .	G. S. Learned.
Lyndonville Creamery Association.	Watertown, 86 Elm Street, . .	Willis C. Conner, manager.
Murphy, W. D., . . .	Auburn,	W. D. Murphy.
Nash, Charles A., . . .	Springfield, 120 Oakland Street, .	Charles A. Nash, manager.
Newhall, J. A., . . .	Newburyport, 32 Monroe Street, .	J. A. Newhall.
Perry, A. D., . . .	Worcester, Kansas Street, . . .	A. D. Perry.
Plymouth Creamery Company,	Boston, 268-270 State Street, .	John W. Davies.
Prentice, H. H., & Co. (Berkshire Creamery).	Pittsfield, Crane Avenue, . . .	H. H. Prentice.
Rockingham Milk Company, .	Charlestown, Boston office, Hancock Square; depot 330 Rutherford Avenue.	Herman A. Toothaker, president.
Smith, George F., . . .	Union Street, Worcester, . . .	George F. Smith.
Somers Creamery Company, .	Springfield, 178 Dwight Street, .	W. M. Cushman.
Springfield Creamery, . . .	Springfield, Main Street, . . .	F. B. Allen, proprietor.
Tait Brothers, . . .	Springfield, 37 Vinton Street, .	Tait Brothers, proprietors.
Turgeon, Frank H., . . .	Boston, 213 Camden Street, . .	Frank H. Turgeon.
Turner Center Dairying Association.	Boston office, 63, 67 and 69 Endicott Street.	Irven L. Smith, manager.
Wachusett Creamery, . . .	Worcester, 6 Lincoln Street, . .	E. H. Thayer & Co., proprietors.
Whiting, D., & Sons, . . .	Boston, 570 Rutherford Avenue, .	Charles F. Whiting.

Modified Milk Laboratories

H. P. Hood & Sons, . . .	Boston, 494 Rutherford Avenue, .	C. H. Hood.
Walker-Gordon Laboratory, .	Boston, 1106 Boylston Street, .	George W. Franklin.
D. Whiting & Sons, . . .	Boston, 570 Rutherford Avenue, .	Charles F. Whiting.

Receiving Depots for Milk, for Shipments to New York.

NAME.	Location.	Manager.
Borden Condensed Milk Company.	West Stockbridge.	-
Willow Brook Dairy Company,	Sheffield,	Frank Percy.

ENCOURAGEMENT OF PRACTICAL DAIRYING EXPENSES.

Agents and assistants, compensation,	\$754 24
Agents and assistants, expenses,	1,464 22
Printing,	541 94
Supplies,	55 18
Express,	39 65
Postage,	12 92
Judges, expenses,	21 56
Certificates,	293 50
Cash prizes,	1,134 00
	<hr/>
	\$4,317 21

REGULAR BUREAU EXPENSES.

Agents, compensation,	\$2,058 89
Agents, expenses,	3,022 50
Bureau, compensation,	250 00
Bureau, expenses,	385 43
Samples purchased,	337 02
Analysts, analyses,	768 00
Analysts, court attendance,	75 00
Clerks, temporary,	147 25
Photography and lantern slides,	210 99
Postage,	83 00
Telephone,	41 90
Express,	6 43
Printing,	495 52
Supplies,	117 00
	<hr/>
	\$7,998 93

P. M. HARWOOD,

General Agent.

Accepted and adopted as the report of the Dairy Bureau.

OMER E. BRADWAY.
 GEORGE W. TRULL.
 GEORGE E. TAYLOR, JR.

REPORT

ON THE

ENCOURAGEMENT OF DAIRYING CONTESTS,

1917.

ENCOURAGEMENT OF DAIRYING PRIZE CONTESTS, 1917.

P. M. HARWOOD, GENERAL AGENT, DAIRY BUREAU.

CLEAN MILKING CONTEST.

For the fifth consecutive year this Bureau has conducted a clean milking contest. Prizes were offered as follows: —

Class 1, Owners. Competition confined to Practical Dairymen.

For results of superior merit, \$1,250, no competitor to receive more than \$15.

For results of merit, \$600, no competitor to receive more than \$7.

For results of honorable mention, certificates of award.

Class 2, Juniors. Competition open to Boys and Girls under Eighteen Years of Age, on Farms Eligible in Class 1.

For results of superior merit, \$350, no competitor to receive more than \$8.

For results of merit, \$225, no competitor to receive more than \$5.

For results of honorable mention, certificates of award.

Class 3, Employees. Competition open to Employees over Eighteen Years of Age, who do the Milking on Farms Eligible in Class 1.

For results of superior merit, \$350, no competitor to receive more than \$8.

For results of merit, \$225, no competitor to receive more than \$5.

For results of honorable mention, certificates of award.

This contest was conducted in accordance with the following rules and suggestions: —

RULES.

1. These prizes are open for contest only to dairies of five or more cows in this Commonwealth, where the owners are practical farmers superintending their own dairies and gaining their principal livelihood from their farms. Decisions of the Dairy Bureau as to eligibility shall be final.

2. All entries must be made on or before June 30, 1917.

3. Dairies will be visited at times most convenient for the agents. Owners shall be notified in reasonable time, and must not commence milking until after the agent arrives. No impractical method and no receptacles other than those in everyday use by the contestant in milking will be allowed. One visit to each dairy will be made by the agent for the purpose of taking the milk sample, and if, through fault of the contestant, the agent is not able to obtain such sample at the time of his visit, said contestant shall thereby forfeit all claims in this contest. In case of change of help the new employee may be substituted by the owner at time of taking sample.

4. A sample of hand-drawn, unstrained, mixed milk from five cows will be taken and tested for sediment.

5. The dairies must be open for full and complete inspection, and questions asked by the agents must be fully answered.

6. Each dairy shall be numbered by the agent, and that number, known only to him, shall be written on the inside of the box holding the sediment sample, and the box sealed at once. The same number shall be written upon a card bearing the name of the owner of the dairy, and sealed in an envelope. These cards and samples shall be delivered to the general agent of the Dairy Bureau of the State Board of Agriculture. The envelope, containing the name of the owner, shall not be opened until after the awards have been made.

7. The prizes will be awarded by competent experts, and the decision of these judges shall be final.

8. No prize shall be allowed for milk that is not meritoriously clean.

9. In case where the milking is done for the owner by a junior, the same sample may compete in both cases.

10. In case where the milking is done for the owner by an employee, the same sample may compete in both cases.

11. The right to reject or cancel any or all entries is reserved by the Dairy Bureau.

12. Results will be announced at Public Winter Meeting, State Board of Agriculture, Worcester, January, 1918.

SUGGESTIONS.

Begin the practice of milking into a pail, can or hod with small opening at once and thus insure the use of such receptacle in the contest.

Remove all dirt from each cow's udder and flanks and wipe with a damp cloth.

Milk with clean clothes and clean, dry hands.

Hold the receptacle in such manner that no dirt can fall upon the milk.

Carefully remove with a clean cloth or paper any foreign matter accidentally collecting upon or within the receptacle used in milking before pouring, thus preventing such matter either from falling or being washed into the mixing can. Pour from the cleanest side of the opening. Rinse receptacle with clean water before milking the next cow.

In response to the above, 374 entries were made and 352 actually competed.

In Class 1 (owners) 222 competed and the following awards were made: —

Superior merit: —

Caroline Bergstrom, West Millbury.
Alphonso E. Brown, Lunenburg.
William G. Davidson, Millbury.
Thomas Dyer, Springfield.
John J. Finnegan, Sharon.
Wellman J. Fish, Lunenburg.
William A. Hale, Gardner.
Caleb T. Hall, Raynham.
Benjamin Horin, Westminster.
Charles B. Jordan, Holden.
Louis J. Kendall, Worcester.
Louis Matson, Millbury.
William H. Morey, Cummington.
John C. Rolfe, Newbury.
Olie A. Tuttle, Hardwick.
John B. Walker, Orange.
Manuel G. White, North Falmouth.

Merit: —

Leonard Anzivino, Brookline.
Ida Asp, Hubbardston.
Bowman S. Beeman, West Brookfield.
Francis S. Beeman, West Brookfield.
Paul L. Bernard, North Adams.
Danforth W. Blanchard, Clarksburg.
Henry M. Burt, Longmeadow.
Walter J. Campbell, Ware.
Charles Carlstrom, Millbury.
Harry L. Carpenter, Attleboro.
George B. Clarke, Concord.
Sereno S. Clark, Williamsburg.
Michael J. Conway, Taunton.
Arthur W. Cutler, West Brookfield.
Daniel F. Danckert, Northborough.
William E. Demond, North Adams.
Frank A. Doubleday, Dana.
Andrew Erickson, Hubbardston.
Ernest L. Faulkner, New Bedford.
Joseph T. Fernandes, Dartmouth.
Joseph A. Foster, New Bedford.

Merit — *Continued.*

Everett B. Fox, Dracut.
Amantha B. Gammons, New Bedford.
Chauncey Gleason, Haverhill.
Henry N. Granger, Auburn.
Peter Hagstrom, Gloucester.
William E. Hartnett, Westminster.
Albert L. Hauck, West Brookfield.
David F. Henshaw, West Brookfield.
Robert Hertel, Fitchburg.
Edwin Ilsley, Newbury.
Robert Jackson, Hardwick.
Matthew Jacobson, Shrewsbury.
Leon A. Jewell, Wilbraham.
Carl A. Johnson, East Longmeadow.
Joseph Kazprzak, Monson.
John I. King, Provincetown.
Willis E. Knight, Gardner.
Lincoln Brothers, Taunton.
Frank H. Linnell, South Hyannis.
Marchant M. Martin, Southborough.
Gustaf Mattila, Hubbardston.
David H. Mitchell, New Bedford.
H. Irving Morlock, Winchendon.
Nadeau Brothers, Fitchburg.
Edward M. Nason, Haverhill.
Carl E. Nelson, Gardner.
James A. Noyes, Newbury.
Aaron Ostermann, Tewksbury.
George N. Perry, Sutton.
H. Waters Putnam, Sutton.
John Quirk, Ware.
Clayton N. Rhoades, Williamsburg.
Dell R. Rideout, Raynham.
William H. Robbins, Becket.
Andrew K. Roberts, Merrimac.
Gustavus A. Rossier, Paxton.
Jose S. Roza, Raynham.
Burt A. Sanborn, Auburn.
Charles Seyfried, Conway.
Isaac B. Snow, Greenfield.
George E. Southworth, Dana.
John B. Souza, Taunton.
Albin Spyut, Ipswich.
Moses L. Stottler, Lancaster.
John Talvitie, Gloucester.

Merit — *Concluded.*

Fred H. Turnbull, Berlin.
Ernest M. Vieweg, Westminster.
Agostino Visocchi, Sudbury.
George C. Wilkins, Plainville.
Edgar D. Winslow, Ware.
Albert L. Woodis, North Brookfield.

Honorable mention: —

William J. Cameron, Ipswich.
Joseph H. Clough, Lowell.
Edgar W. Coit, Greenwich.
Oscar Cook, North Adams.
Herbert A. Day, Warren.
Lorenzo Dean, Boylston.
Mrs. Samuel Donnelly, East Longmeadow.
Elbert H. Flagg, Westford.
Peleg E. Francis, Rehoboth.
Benjamin B. Green, Wilbraham.
Lee S. Jenks, Feeding Hills.
Mrs. Annie Kronvall, East Longmeadow.
Silas Little, Newbury.
Manuel Morris, Raynham.
Wesley A. Olds, Middlefield.
Irving W. Putnam, Sutton.
Dwight C. Randall, Belchertown.
Frank E. Russell, Winchendon.
Antone Santos, Raynham.
Chandler E. Smith, Leominster.
John Salstrom, Millbury.
Anna H. Whitney, Lancaster.
Harvey O. Winch, Templeton.

In Class 2 (juniors) 38 competed and the following awards were made: —

Superior merit: —

Floyd D. Blanchard, Clarksburg.
Percy K. Brown, Lunenburg.
Clara Hertel, Fitchburg.
Isadore M. Horin, Westminster.
Harold L. Jordan, Holden.

Merit: —

Dominic Anzivino, Brookline.
Henry W. Davidson, Millbury.

Merit — Concluded.

Andrew Doubleday, Dana.
Joseph P. Harris, Millbury.
Robert J. Jackson, Hardwick.
Maxine A. Rhoades, Williamsburg.
Henry H. Richardson, Millis.
Clifford Rideout, Raynham.

Honorable mention: —

James H. Dean, Boylston.
Clifton B. Green, Wilbraham.

In Class 3 (employees) 92 competed and the following awards were made: —

Superior merit: —

A. S. Campbell, Ware.
Roy A. Chamberlain, Springfield.
John T. Cleary, Sharon.
Elmer W. Fish, Lunenburg.
George P. Hall, Raynham.
Herbert E. Kendall, Worcester.
Joseph D. Rolfe, Newbury.
Charles Visocchi, Sudbury.

Merit: —

Albert N. Brown, Lunenburg.
Chester Cameron, Ipswich.
Austin J. Conway, Taunton.
Harry G. Cowan, Holden.
Harold J. Davidson, Millbury.
Thomas Ferguson, New Bedford.
Almon D. J. Flagg, Greenfield.
Stanley R. Fox, Dracut.
Matthew Gasper, Dartmouth.
Harry S. Granger, Auburn.
Laurie L. Harris, Fitchburg.
Harry Hertel, Fitchburg.
Leonard T. Ilsley, Newbury.
Walter Kazprzak, Monson.
Robert H. Lincoln, Taunton.
Charles E. Lord, Merrimac.
Manuel Moniz, New Bedford.
Daniel Morrison, Gardner.
Norman C. Perry, Sutton.
Daniel J. Quirk, Ware.
Clarence A. Rossier, Paxton.

Merit — *Concluded.*

Herman R. Russell, Haverhill.
George Seagers, Becket.
Robert A. Sherman, South Hyannis.
Manuel B. Souza, Taunton.
Arthur A. Turnbull, Berlin.
Leon E. Waltz, Westminster.
Alton B. Winslow, Ware.

Honorable mention: —

Harold D. Burley, Lunenburg.
George W. Clough, Haverhill.
Harry S. Donnelly, East Longmeadow.
Maurice S. Flagg, Westford.
William C. Francis, Rehoboth.
Prentiss R. Jenks, Feeding Hills.
George A. Mosher, Lancaster.
Kenneth K. Putnam, Sutton.
Charles F. Russell, Winchendon.
Frank C. Smith, Leominster.

The judge in the clean milking contest was Dr. Charles E. Marshall of Amherst, to whom our thanks are especially due for the splendid work done by him for the third time free of charge except for actual expenses.

ADDITIONAL PRIZES OFFERED TO LOCAL INSPECTORS OF MILK.

(a) To local inspectors of milk in cities and towns supplied by more than fifty dairies, and having fifteen or more separate entries in the 1917 clean milking contest, for the greatest number of superior merit cottons the following prizes were offered:—

[illegible]

The following awards were made: —

First prize, Gustaf L. Berg, Worcester.
 Second prize, John F. Bresnahan, Fitchburg.
 Third and fourth prize, divided between Stephen C. Downs, Springfield,
 and Harry O. Knight, Gardner.
 Fifth prize, Lewis I. Tucker, Taunton.

(b) To local inspectors of milk in cities and towns supplied by less than fifty dairies, and having five or more separate entries in the 1917 clean milking contest, for the greatest number of superior merit cottons the following prizes were offered:—

First,	\$16 00
Second,	12 00
Third,	10 00
Fourth,	8 00
Fifth,	5 00

The following award was made:—

First prize, Fred E. Marsh, Ware.

A special certificate was awarded Stephen C. Downs, Springfield, in consideration of the splendid work done by him in securing the largest number of entries in the contests of 1916 and 1917.

DAIRY PRODUCTS SHOW.

A milk, cream, butter and cottage cheese exhibit was held under the auspices of the Allied Dairy Interests of Massachusetts in connection with the Public Winter Meeting of the State Board of Agriculture at Springfield, Jan. 9 to 12, 1917. The show was financed by the State Board of Agriculture, and was superintended by W. P. B. Lockwood, secretary of the Massachusetts Dairymen's Association.

The prize winners in the several classes were as follows:—

Class 1. Market Milk (Raw), Massachusetts Produced.

NAME.	Address.	Prize.	Score.
J. D. Phillips,	Topsfield,	First,	97.70
F. E. Morlock,	Winchendon,	Second,	97.60
J. B. Howland,	Taunton,	Third,	97.00
F. F. Ferreira,	Falmouth,	Fourth,	96.90
Beeman Brothers,	Ware,	Fifth,	96.58

Louis J. Kendall, Worcester; Otto Wickman, Gardner; W. A. Slater, Lenox; Frank H. Linnell, South Hyannis; F. C. Clough, Attleboro; Estate of Samuel Donnelly, Longmeadow; Thomas Bliss, Attleboro; Albert Elwell, Ipswich; Ernest M. Vieweg,

Fitchburg; Heywood & Heywood, Gardner; S. Fremont Crocker, Marston's Mills; G. W. Robbins, Fitchburg; H. Irving Morlock, Winchendon; Louis S. Cox, Lawrence; Tait Brothers, Springfield; S. P. Young, Wellesley Hills; Burton Allen, Ayer; Paul Cunningham, Bolton; Herbert A. Day, Warren; and A. C. Higgins, Andover, received awards of \$1 each, having scores ranging from 96.50 to 93.25. The total number of entries was 42.

Class 2. Market Milk (Pasteurized), Massachusetts Produced.

NAME.	Address.	Prize.	Score.
Somers Company, . . .	Springfield, . . .	First,	96.90
Tait Brothers, . . .	Springfield, . . .	Second,	96.16
J. A. Hamilton, . . .	Cambridge, . . .	Third,	94.60
J. M. Hager & Son, . .	Winter Hill, . . .	Fourth,	93.44

Total entries, 4.

Class 3. Market Milk (Raw), for Sale in Massachusetts.

Tait Brothers, . . .	Springfield, . . .	First,	96.15
M. C. Southworth, . .	Campello, . . .	Second,	95.38
F. C. Clough, . . .	Attleboro, . . .	Third,	95.20
John O. Tingley, . . .	Attleboro, . . .	Fourth,	93.74

Total entries, 7.

Class 4. Market Milk (Pasteurized), for Sale in Massachusetts.

D. Whiting & Sons, . .	Boston,	First,	96.21
Angelo Indessi, . . .	Springfield, . . .	Second,	96.20
F. B. Mallory, . . .	Springfield, . . .	Third,	96.18
Tait Brothers, . . .	Springfield, . . .	Fourth,	95.38
H. P. Hood & Sons, . .	Charlestown, . . .	Fifth,	94.50

Total entries, 7.

Class 5. Market Milk, Cities and Towns Health Boards.

Board of Health, . . .	Brockton,	First,	95.86
Board of Health, . . .	Somerville,	Second,	92.87
Board of Health, . . .	Worcester,	Third,	92.76
Board of Health, . . .	Barnstable,	Fourth,	92.75
Board of Health, . . .	Fitchburg,	Fifth,	92.39

Total entries, 13.

*Class 6. Market Milk (Raw), Massachusetts Producers.*¹

NAME.	Address.	Prize.	Score.
Albert Elwell,	Ipswich,	First,	96.90 ²
Otto Wickman,	Gardner,	Second,	96.90 ²
E. M. Vieweg,	Fitchburg,	Third,	96.70
W. D. Field,	Shelburne Falls,	Fourth,	96.50
Beeman Brothers,	Ware,	Fifth,	96.40

O. E. Bradway, Monson; A. K. Roberts, Merrimac; E. W. Coit, Ware; B. F. Paige, Whitman; Peter Hagstrom, Gloucester; Louis Matson, Auburn; Reid Brothers, East Longmeadow; E. F. Richardson, Millis; Paul Cunningham, Bolton; E. F. Ferreira, Falmouth; Leon Jewell, Ludlow; Harry Carpenter, Attleboro; P. J. Landis, Belchertown; Louis J. Kendall, Worcester; B. H. Allen, Ayer; L. M. Dolloff, Arlington; Fred L. Fisher, Norwood; Herbert A. Day, Warren; Wiley Brothers, North Brookfield; and G. B. Clark, Concord, received awards of \$1 each, having scores ranging from 96.20 to 93.60. The total number of entries was 38.

Class 7. Market Cream, Massachusetts Produced.

NAME.	Address.	Prize.	Score.
B. F. Paige,	Whitman,	First,	98.00
O. E. Bradway,	Monson,	Second,	97.00 ²
Melvin O. Bradford, . . .	Acushnet,	Third,	97.00 ²
Norman E. Borden, . . .	South Sudbury,	Fourth,	95.80
Paul Cunningham, . . .	Bolton,	Fifth,	78.70

Total entries, 9.

Class 8. Dairy Butter.

Norman E. Borden, . . .	South Sudbury,	First,	95.50
A. E. Bolton,	Woronoco,	Second,	95.00
Henry Ward,	Orange,	Third,	94.00
W. C. Stoughton,	Montague,	Fourth,	93.50
Mrs. Wesley Olds,	Middlefield,	Fifth,	93.00

Total entries, 14.

¹ Limited to dairymen depending on their farms for a livelihood.

² Tie broken by bacteria count.

Class 9. Creamery Butter.

NAME.	Address.	Prize.	Score.
Deerfoot Farm Creamery, . .	Southborough, . . .	First,	97.50
H. P. Hood & Sons, . . .	Charlestown,	Second,	92.00

Total entries, 3.

Class 10. Cottage Cheese.

Norman E. Borden, . . .	South Sudbury, . . .	First,	- ¹
Tait Brothers,	Springfield,	Second,	- ¹
Mrs. E. R. Baldwin, . . .	Great Barrington, . . .	Third,	- ¹

Total entries, 3.

The sweepstakes ribbon for the highest scoring milk sample in the show was won by J. D. Phillips, Topsfield.

Note. — The Allied Dairy Interests includes the Massachusetts Dairymen's Association, Massachusetts Milk Inspectors' Association, Massachusetts Agricultural College, United States Department of Agriculture, and Dairy Bureau of the Massachusetts State Board of Agriculture, co-operating.

¹ No score returned.



FOURTH ANNUAL REPORT

ON

BOYS' AND GIRLS' CLUB WORK.

FOURTH ANNUAL REPORT ON BOYS' AND GIRLS' CLUB WORK.

A report of junior extension work for the past year should cover not only what has been done by the field workers, but also what has been accomplished by the young people.

This office, like many others in the college, has suffered because of unsettled times, and as a result the work has not been done in the same systematic way as might have otherwise been expected.

DEPARTMENT STAFF.

The force comprised, December 1, 1916, three field workers and one clerk. December 1, 1917, it had grown to five field workers and three clerks. Within that period, however, nine different field workers and four clerks have seen service. Of the original workers only the supervisor and head clerk remain.

THE MASSACHUSETTS PUBLIC SAFETY COMMITTEE.

The Public Safety Committee of Massachusetts furnished funds which permitted of the employment of extra workers in the early spring, which made possible a very considerable expansion of the work, and very naturally aided in the campaign for increasing food production and conservation.

The following letter was sent to those who were interested in this work: —

The committee of ten of the Public Safety Committee recommends that the following methods be carried out in organizing boys and girls for food production in the State of Massachusetts for the coming year: —

First. — The local committee shall get in touch with the State leader of Boys' and Girls' Club work, G. L. Farley, Amherst, Massachusetts, and secure from him the plans for organization in the State.

Second. — The local committee shall get in touch with the Farm Bureau of the county and learn the plans for organization within the county.

Third. — A group of eight or ten interested citizens shall call a meeting of adults and children, at which time the boys' and girls' work and the method of organization shall be presented. At the close of the meeting those interested should be assembled in the front of the room and their names and addresses listed by the committee. The children should then be instructed to secure plots of ground suitable in size. A boy or girl between the ages of twelve and eighteen years should be able to care for at least one-twentieth of an acre. Smaller children may work smaller pieces. As soon as the ground has been secured a second meeting of the boys and girls should be held. The members securing ground should then be organized in a group of from five to thirty children, and an adult leader placed in charge of each group.

The children should be instructed in planting products that may be used fresh and canned for winter use. Products should also be grown that may be dried or placed in cellar storage.

There are four methods for following up the work and maintaining interest during the summer: —

1. Printed instructions will be sent to the boys and girls from the Farm Bureaus and the Agricultural College.

2. The children should be assembled under a local leader to discuss and study these printed instructions.

3. The local leader should make personal visits from time to time during the summer to the garden plots of the members under his leadership.

4. Field meetings should be held where the members are assembled, for instruction in cultivation, preservation and storage.

Each club or organization should train three or four members as a demonstration team to demonstrate in the community the better practices of production, conservation and storage. These demonstration teams should be used to demonstrate before schools, public meetings, granges and other civic organizations.

The Agricultural College, through the Farm Bureaus, will send into each county instructors to train the local leaders in canning, drying and preserving. Application for these training schools should be made to the extension service at the Agricultural College.

During the summer arrangements should be made for an exhibit of products, canned fruit and vegetables, dried products, drying equipment and storage construction in the local community. The exhibit should consist of three distinct parts: —

First. — Products as above named.

Second. — Demonstrations in the practices of canning, drying and storage.

Third. — Judging contests between club members to train members to recognize products of quality.

Instructions for these judging contests and general outlines for conducting exhibits may be secured from the State leader in charge of the club work at Amherst, Massachusetts.

Each member should be required to keep a record of cost of production, hours of labor, quantity produced, and other items that will show the net profit upon investment, at the close of the season. In communities where a large number of organizations produce more products than can be readily cared for in the home, a public market should be organized and conducted one day each week. The most satisfactory day for this market is Saturday.

At the close of the season an achievement day should be set aside. All members completing the work by keeping a record, following instructions, taking part in demonstrations, making an exhibit, and completing a report and story of the work performed, should be given a small achievement medal from a design furnished by the State leader in charge of Boys' and Girls' Club work, Amherst, Massachusetts. These achievement medals may be secured from the State club leader.

Paid supervisors are necessary in every town if the best results are to be secured. Additional information may be secured from the State club leader.

Together with the letter was sent a facsimile of the enrollment card, which shows the activities carried on in the State: —

FACE OF CARD.

MASSACHUSETTS JUNIOR EXTENSION WORK.

AGRICULTURAL AND HOME ECONOMICS CLUBS.

Application Blank.

County.....Town or City.....

AGES: Contestants must have passed tenth birthday and must not have passed nineteenth on opening day of contest.

ENROLLMENT: I hereby make application to be enrolled as a contestant, and agree to carry through to completion the club work checked on the other side.

The club activity is to be carried on at the home of.....
or at.....in the town of.....

Name of School.....Grade.....

Name of Teacher.....Address.....

COUNTERSIGNING:.....I was.....

(Name of Parent or Guardian)

years old last.....

(Name of Month.)

Did you belong to this club last year?.....

My name is.....

My post-office address is.....

BACK OF CARD.

PROJECTS.

Application Blank.

X	CLUB.	Conditions.	Dates.	Area.
	Corn,	½, 1 acre or more, .	Growing Season, .	
	Potato,	⅛, ¼, ½ acre or more, .	Growing Season, .	
	Market Gardening, . .	¼, ½, 1 acre or more, .	Growing Season, .	
	Canning & Marketing, .	24 qts.,	June 1-October 15, .	
	Poultry,	10 to 100 hens, . . .	March 1-June 30, .	
	Pig,	1 or more pigs, . . .	June 1-October 1, .	
	Home Economics, . .	60 hours' work, ¹ . .	February 1-April 30, .	

¹ Twenty hours bread or garment making.

RULES: Indicate in first column with X the club or clubs you wish to join. Be sure to state definitely in last column the area of the plot you intend to cultivate, the exact number of hens which you wish to enter, etc. Stories are due in Corn, Potato, Market Garden and Canning Clubs on November 1; in Poultry, Pig and Home Economics within two weeks of close of contest. Monthly reports are required in Poultry, Pig, Home Economics and Canning. This card should be returned to office of Junior Extension Work, Amherst, Mass., or to County Farm Bureau or League, if so stamped.

PREMIUMS: Washington Trip, New England Trip, Week at College, ribbons and State club pins.

FUNDS AVAILABLE FOR WORK

The State funds were withdrawn on the passage of the bill by the National Congress providing appropriation for this type of work. Under the plan of distribution of the money thus made available, Massachusetts junior extension work received \$7,000. A portion of this fund was used to provide an assistant to the State supervisor, and the remainder, divided equally, was offered to the counties which had done the most in club work as part salary of a county club worker.

Six counties availed themselves at once of this offer; one has recently done so; and one will do so beginning February 1.

LINES OF ACTIVITY.

It will be seen from the enrollment card that the same lines of activity have been followed this year as last, — the home and school garden activities and the eight club projects. Some minor changes, however, have been made and new work started.

The home economics work was divided into two distinct lines, — garment making and bread making.

CONTESTS.

To the regular work of growing and fattening a pig in the summer and fall the sow and litter contest has been added. We hope in this way to make it easier for the boys and girls to obtain pigs.

It has been felt for some time that the spring egg-laying contest was not accomplishing as much as was desired in interesting young people in poultry. This year, together with the egg-laying contest, the young people were interested in hatching, brooding and rearing chicks. This winter an egg-laying contest is being conducted.

That 30 of the 35 cities, and some 75 per cent. of the towns, have carried on some form of this work this year under more or less direct supervision of the college or the Farm Bureaus and improvement leagues shows the interest this year and the constant growing interest year by year.

LOCAL LEADERSHIPS.

In one county 18 of the 20 towns appropriated money for local leadership as a result of the effort of the county club leader. In two other counties of the State several towns at their annual meeting appropriated money for this work. In several cities the school departments appropriated money for club work. This money was used to pay the salary of a supervisor or supervisor and assistants.

Where county organizations failed to take up the work this office worked upon request directly with the community.

As a result of this plan of organization some 230 paid and 240 unpaid local leaders were at work in the State.

AGENCIES INTERESTED IN WORK.

The many agencies interested is shown by the following statements:—

The State Board of Agriculture appropriates \$2,000 to be spent to further the work.

The Brockton Fair Association increased the amount given for furthering this work from \$200 to \$500.

Four pork packing concerns of Massachusetts give a total of \$1,000 a year to be used to interest young people in the pig club projects. This offer is for five consecutive years, this being the second year.

The Hampshire County Fair Association held a club exhibit for the first time, and voted money for premiums.

At a fair held for the first time on the Allen Farm in Pittsfield, Berkshire County, a large building used originally for the exercising of horses in the winter was given over to the exhibit of club work.

Much more emphasis was given at the Athol and Fitchburg fairs to the work, at each one day being known as club day.

A citizen gave this year \$150 to be applied as a scholarship. This is to be given to the boy or girl who does the best club work, the award to be made by a committee of three disinterested individuals appointed by the supervisor of club work.

The city of Boston started this work in the spring under the direction of a paid leader, and the State supervisor was made a member of the advisory board.

ATTENDANCE AT MEETINGS AND DEMONSTRATIONS.

Since December 1, 1916, there have been approximately 58,664 people at demonstrations, meetings, etc., held in connection with the work by our five workers.

GROWTH OF THE WORK.

The following table will give some indication of the growth of the work, and what has been accomplished this year. This shows the response of the children.

PROJECT.	Total Enrollment.	Date Enrollment will close.	Date for Reports to be in.
Corn,	160	July 1.	November 1.
Potato,	497	July 1.	November 1.
Home garden,	90,000	- - -	- - -
Canning,	3,092	July 1.	November 1.
Poultry,	652	- - -	- - -
Pig,	2,250	June 1.	October 1.
Home economics,	2,006	February 1.	May 1.
Market garden,	992	July 1.	November 1.
	99,649	- - -	- - -

EXPENDITURE OF APPROPRIATION AVAILABLE THROUGH THE STATE BOARD OF AGRICULTURE.

The following will show the manner in which the \$2,000 available through the State Board of Agriculture is expended:—

1. A part is used as premiums at the midwinter exhibit of the State Board of Agriculture.
2. To purchase club pins.
3. Premiums, as follows:—

First Prize.— One in each project, trip to Washington.

Second Prize.— One in each project, New England trip.

Third Prize.— Seven in each project, week at Massachusetts Agricultural College camp.

Fourth Prize.— Sixteen in each project, value \$1 (usually a book).

MEMBERSHIP REQUIREMENTS.

To be a full-fledged club member and eligible for one of the above prizes a young person must first enroll; second, carry the work to completion; third, keep accurate records; and fourth, write a story.

A club pin is awarded to all who do this. Many, however, comply with the first two requirements, but fail on the last two. No small number comply with the first three, but fail on the fourth. This year especially, with the large amount of emphasis placed upon producing food, the first two items were given more attention than the last two by all the field workers.

HOME GARDEN WORK.

Besides individual prizes the following are offered to encourage the home garden work: —

1. Inter-city contest: first prize, large silver cup; second prize, small silver cup.
2. Inter-town contest: —
Over 7,500: first prize, large silver cup; second prize, small silver cup.
Under 7,500: first prize, large silver cup; second prize, small silver cup.
3. Inter-school contest: —
City (over 8 rooms), \$20, \$15, \$10, \$5.
Village (2 to 8 rooms), \$20, \$15, \$10, \$5.
Rural (1 room), \$20, \$15, \$10, \$5.

NEED FOR LARGER APPROPRIATION.

If one but glances through the awards made, and gets some comprehensive idea of the growth of the work, it becomes at once evident that the \$2,000 is fast outgrowing its elasticity. This sum should in some way be increased.

THE MASSACHUSETTS JUNIOR EXTENSION CLUB LEADERS'
ASSOCIATION.

Those interested in junior extension work were organized at the March meeting held in Boston, and the following constitution was adopted: —

CONSTITUTION.

ARTICLE I.

Name.

This organization shall be called the Massachusetts Junior Extension Club Leaders' Association.

ARTICLE II.

Object.

The object of this association shall be to promote club work among the young people of Massachusetts. This shall consist of gardening, household arts and care of live stock.

ARTICLE III.

Membership.

All people interested in junior extension club work shall be eligible for membership.

ARTICLE IV.

Officers.

The officers of the association shall be as follows: president, vice-president, secretary-treasurer and an executive committee. The executive committee shall consist of the above officers and such other persons as they choose to appoint.

ARTICLE V.

Duties of Officers.

The president shall preside at all meetings of the association, and appoint all committees not otherwise provided for. In case of the absence or resignation of the president, the vice-president shall perform all duties pertaining to the office of the president. The secretary-treasurer shall keep a record of all business transacted at the meetings of the association, and a roll of all the members, with names and addresses, and shall conduct correspondence. The secretary-treasurer shall also have charge of all funds belonging to the association. It shall be the duty of the executive committee to arrange for the work of the association for the year. Five members and the president shall constitute a quorum of the executive committee.

ARTICLE VI.

Meetings.

The meetings of the association shall be called by the secretary, at the request of the president. Twenty-five members shall constitute a quorum at all business meetings of the association. There shall be two meetings each year, one during the winter at such place as shall be determined by the executive committee, and one during the summer at Amherst at the Agricultural College.

ARTICLE VII.

Dues.

There shall be no dues required for membership.

ARTICLE VIII.

This constitution may be amended at any regular meeting by a two-thirds vote of the members present, provided notice of the intended change has been given to the association at least two weeks before the vote on the amendment is taken.

SUMMARY OF WORK DONE IN 1917.

One of the most interesting pieces of work done this year has been that in conservation done by club members in community canneries. The figures speak for themselves.

COMMUNITY.	Workers.	Quarts canned.
Brockton,	10	5,026
Gardner,	3	2,370
Fitchburg,	12	4,188
Harvard,	11	2,000
Northborough,	5	1,208

One little girl in Berkshire County canned 1,016 quarts of vegetables, fruits and greens. The total number of quarts canned was 70,756.

Home Economics Clubs.

Total number enrolled,	2,006
Number of boys in club,	232
Number of girls in club,	1,774
Total number of loaves of bread made,	24,916
Largest number made by one person,	244
Total number of garments made: —	
Hand,	355
Machine,	409
Hand and machine,	1,099

Egg-laying Contest. — One hundred and thirty-three members, — a report shows profit of \$1.04 per hen.

Market Garden. — Seventy-one members show a profit of \$40.66 per garden of one-twentieth of an acre.

Corn Club. — Average yield of 79 bushels.

Potato Club. — Best report of 45 bushels from one-eighth of an acre at a profit of \$55.11.

Pig Club. — Two thousand, two hundred and fifty members raised 2,800 pigs. One boy showed \$13.38 profit and a daily gain of 1.06 pounds.

A rather unique piece of work was done at Lowell. Children from the first to the fourth grade were each given pumpkin

seeds. As the pumpkins grew a red cross was outlined on the shell. At the end of the season the pumpkins were sold and proceeds given to the Red Cross. I have not yet received figures showing the total of sales, but one child raised 40 pumpkins from 8 seeds and another 33 from 7 seeds.

CONCLUSION.

This report should not close without a word in regard to its value. Back of all this canning, sewing, these gardens, these pigs and hens are boys and girls. They are the future citizens of this State. They will within a few years be the active citizens. This work has proved that it molds these young people into the type of young citizens that Massachusetts will need as her adult citizenship.

This work produces and conserves character as well as food.

Quotations from two papers will make a fitting close to this report. They are typical of all.

"And mamma tells us that in helping others as requested, by raising and saving, we have really helped ourselves most of all." — HELEN GRAY, Grade 7, Waltham, Massachusetts.

"Now on entering a club do not be a slacker, but remember you are working for Uncle Sam and the U. S. A." — GLADYS HARLOW, North Easton, Massachusetts.

FINANCIAL STATEMENT.

Appropriation (through Board of Agriculture),	\$2,000 00
Cash prizes,	532 50
Cups, badges, buttons and ribbons,	287 70
Prize trips,	1,071 58
Printing,	20 41
Books, supplies, etc.,	66 30
Express,	10 61
Miscellaneous,	9 55
Balance,	1 35

Respectfully submitted,

GEORGE L. FARLEY,
Supervisor, Junior Extension Work.

FINANCIAL RETURNS
AND
ANALYSIS OF PREMIUMS AND GRATUITIES
OF THE
INCORPORATED AGRICULTURAL SOCIETIES,
WITH
MEMBERSHIP AND INSTITUTES,
FOR THE YEAR 1917.

FINANCIAL RETURNS OF THE INCORPORATED SOCIETIES FOR THE YEAR ENDING NOV. 30, 1917.

SOCIETIES.	When incorporated.	Amount now invested as Capital Stock. (R. L. 124, Sects. 1 and 3.)	ASSETS.			LIABILITIES.		
			Total.	Real Estate.	Personal Property.	Total.	Premiums unpaid.	Outstanding Bills.
Amesbury and Salisbury (Agricultural and Horticultural),	1881	\$8,421 69	\$8,519 96	\$7,896 69	\$653 27	\$2,702 65	-	\$452 65
Barnstable County,	1844	12,494 71	13,699 35	10,000 00	3,699 35	2,001 75	\$101 75	400 00
Blackstone Valley,	1884	3,000 00	9,464 28	9,226 15	238 13	3,610 00	-	60 00
Deerfield Valley,	1871	9,750 00	9,900 25	9,500 00	400 25	1,550 00	-	171 25
Eastern Hampden,	1856	20,500 00	20,587 45	20,200 00	387 45	7,920 25	-	-
Essex,	1818	4,200 00	7,107 56	-	7,107 56	5,100 00	-	-
Franklin County,	1850	28,694 00	30,890 75	28,694 00	2,196 75	7,166 33	-	466 36
Hampshire,	1814	3,255 26	6,125 00	6,075 00	50 00	4,050 00	-	-
Hampshire, Franklin and Hampden,	1818	48,050 00	48,401 50	47,450 00	951 50	14,500 00	-	-
Higland,	1859	3,120 00	3,123 68	3,000 00	123 68	70 00	-	30 00
Hillsdale,	1883	5,620 50	6,395 70	5,250 50	1,145 20	-	-	-
Livingham (Agricultural and Horticultural),	1867	3,400 00	3,931 87	2,500 00	1,431 87	-	-	-
Hoosac Valley,	1860	15,000 00	15,939 34	15,000 00	939 34	11,992 80	970 80	97 00
Housatonic,	1848	30,941 28	33,480 60	29,000 00	4,480 60	50 00	-	50 00
Lenox Horticultural,	1910	2,400 00	3,762 23	2,000 00	1,762 23	-	-	-
Marshfield (Agricultural and Horticultural),	1867	16,700 00	16,779 24	16,000 00	779 24	4,538 00	38 00	-
Martha's Vineyard,	1859	3,016 68	4,998 05	2,750 00	2,248 05	2 00	-	2 00
Massachusetts Horticultural,	1829	868,175 10	877,835 51	518,564 63	359,270 88	-	-	-
Massachusetts Society for Promoting Agriculture,	1792	-	-	-	-	-	-	-
Middlesex North,	1855	7,040 51	7,040 51	-	7,040 51	-	-	-
Nantucket,	1856	3,500 00	3,842 16	3,500 00	342 16	-	-	-
Oxford,	1888	9,100 00	9,263 32	8,500 00	763 32	1,944 00	-	244 00
Plymouth County,	1819	35,727 83	35,986 81	35,627 83	358 98	18,945 32	-	1,745 32
Quannapowitt (Association),	1909	9,000 00	9,000 00	8,000 00	1,000 00	1,854 00	4 00	200 00
Union (Agricultural and Horticultural),	1867	3,270 14	3,317 85	2,718 04	599 81	992 78	113 50	436 86
Westport,	1913	1,847 63	1,923 24	400 00	1,523 24	-	-	-
West Taunton,	1913	16,400 00	17,028 18	16,000 00	1,028 18	4,440 00	-	340 00
Weymouth (Agricultural and Industrial),	1891	103,484 05	103,921 48	90,258 88	13,662 60	200 00	200 00	-
Worcester,	1818	48,319 70	48,319 70	47,599 70	750 00	43,883 58	1,243 15	1,540 43
Worcester North (Agricultural and Driving Association),	1917	16,200 00	16,539 28	16,000 00	539 28	3,970 30	-	20 30
Worcester Northwest (Agricultural and Mechanical Association),	1867	18,958 05	19,444 06	17,900 00	1,544 06	8,403 46	683 45	120 01
Worcester South,	1855	10,500 00	11,447 13	10,000 00	1,447 13	-	-	-
Worcester County West,	1851	\$1,373,425 43	1,411,392 31	989,611 43	421,780 88	149,787 25	3,354 65	6,376 18

FINANCIAL RETURNS OF THE INCORPORATED SOCIETIES FOR THE YEAR ENDING NOV. 30, 1917—*Concluded.*

SOCIETIES.	LIABILITIES— <i>Concluded.</i>		RECEIPTS.				EXPENDITURES.			
	Mortgages.	Notes.	Total.	Bounty.	Gate Receipts.	Concessions and Rentals.	All Other Sources.	Total.	Premiums and Gratuities.	All Other Expenses.
Amesbury and Salisbury (Agricultural and Horticultural),	\$1,500 00	\$750 00	\$2,513 35	\$764 80	\$488 45	\$248 09	\$1,012 01	\$2,460 08	\$801 65	\$1,658 43
Barnstable County,	—	1,500 00	12,152 02	953 75	5,434 75	998 75	4,764 77	10,764 89	1,193 00	9,571 89
Blackstone Valley,	2,500 00	1,050 00	7,116 54	1,022 25	2,097 15	201 50	3,817 89	7,185 34	1,457 17	5,698 17
Deerfield Valley,	—	1,550 00	2,969 43	922 25	1,485 40	181 75	380 03	2,944 96	1,790 00	1,154 96
Eastern Hampden,	5,049 00	2,700 00	5,778 19	1,000 00	3,190 50	667 50	920 19	5,707 91	1,130 05	4,577 86
Essex,	—	5,100 00	5,123 49	997 50	1,347 00	464 45	2,314 54	5,299 61	938 00	4,361 61
Franklin County,	1,300 00	5,400 00	16,120 11	949 75	9,171 51	2,225 60	3,773 25	15,181 83	2,232 25	12,949 58
Hampshire,	750 00	3,300 00	2,984 99	981 25	399 25	35 00	1,569 40	2,974 99	821 80	2,153 19
Hampshire, Franklin and Hampden,	10,000 00	4,500 00	33,534 02	1,000 00	9,132 50	2,998 40	21,003 12	33,182 52	2,304 50	30,878 02
Hillside,	—	40 00	1,319 09	911 10	190 40	89 44	128 15	1,440 01	1,031 35	408 66
Hingham (Agricultural and Horticultural),	—	—	2,231 70	1,000 00	920 00	227 40	84 80	2,135 87	1,228 20	909 67
Hoosac Valley,	—	—	1,453 93	956 50	101 25	—	396 18	1,444 81	839 45	551 36
Housatonic,	9,000 00	1,925 00	7,420 18	713 00	4,523 75	219 75	1,963 68	8,391 34	983 30	7,408 04
Lenox Horticultural,	—	—	17,851 95	927 35	12,375 00	2,826 00	1,523 60	14,352 67	5,672 75	8,679 92
Marshfield (Agricultural and Horticultural),	—	—	1,042 09	876 04	100 20	—	65 85	833 46	98 25	735 21
Martha's Vineyard,	—	4,500 00	7,777 44	922 85	3,391 05	1,549 65	1,913 89	7,698 20	698 70	6,999 50
Massachusetts Horticultural,	—	—	1,396 11	921 25	340 55	100 00	4 31	1,415 53	1,015 53	400 00
Massachusetts Society for Promoting Agriculture,	—	—	21,499 86	1,000 00	3,337 03	4,140 93	12,821 00	24,011 07	5,756 00	18,255 07
Middlesex North,	—	—	1,129 24	840 70	—	—	288 54	1,282 39	914 79	367 60
Nantucket,	—	—	2,449 81	948 50	696 85	431 20	373 26	2,253 73	1,120 00	1,133 73
Oxford,	900 00	800 00	4,158 46	938 95	1,464 60	324 00	1,430 01	3,990 14	1,095 10	2,895 04
Plymouth County,	—	—	864 36	701 79	—	—	162 57	729 00	670 30	68 70
Quinnapowitt (Association),	11,900 00	2,300 00	8,702 42	920 25	4,659 80	794 15	2,926 52	8,727 89	993 45	7,734 44
Union (Agricultural and Horticultural),	900 00	750 00	2,331 81	—	663 50	216 14	1,452 17	1,755 16	885 05	870 11
Westport,	—	342 42	1,155 19	—	660 40	89 50	405 29	1,150 48	422 35	728 13
West Taunton,	—	—	1,077 00	315 25	274 85	35 00	421 90	1,064 48	377 05	687 43
Weymouth (Agricultural and Industrial),	3,500 00	600 00	4,601 08	839 90	2,998 25	296 50	466 43	3,993 80	972 20	3,021 60
Worcester,	—	—	46,500 73	1,000 00	23,374 75	5,338 25	16,787 72	46,063 30	16,299 00	29,764 30
Worcester North (Agricultural and Driving Association),	11,900 00	29,200 00	5,537 30	970 30	3,617 00	425 00	525 00	3,626 75	1,309 45	2,317 30
Worcester Northwest (Agricultural and Mechanical Association),	3,050 00	900 00	9,866 59	880 00	6,426 40	768 00	1,792 10	9,527 31	2,845 00	6,682 31
Worcester South,	—	7,600 00	11,106 68	929 15	3,735 70	461 65	5,980 18	10,637 62	3,840 00	6,797 62
Worcester County West,	—	—	5,366 90	920 70	2,893 55	1,002 45	1,140 20	4,842 64	1,246 45	3,596 19
	\$65,240 00	\$74,807 42	\$255,102 06	\$27,032 88	\$109,301 18	\$26,756 05	\$92,128 00	\$247,079 78	\$63,064 14	\$184,015 64

ANALYSIS OF GENERAL PREMIUMS AND GRATUITIES OFFERED AND PAID, AND INSTITUTES HELD, IN THE YEAR ENDING NOV. 30, 1917.

SOCIETIES.	TOTAL PREMIUMS AND GRATUITIES.		FARMS, FARM IMPROVEMENT, ETC.		LIVE STOCK.		FIELD AND GARDEN CROPS.	
	Offered.	Paid.	Offered.	Paid.	Offered.	Paid.	Offered.	Paid.
Amesbury and Salisbury (Agricultural and Horticultural),	\$1,926 20	\$565 80	-	-	\$1,214 50	\$145 75	-	-
Barnstable County,	2,170 50	914 00	\$94 00	-	321 00	321 00	\$84 00	-
Blackstone Valley,	2,013 75	1,231 75	104 00	\$92 00	1,533 00	584 00	-	-
Deerfield Valley,	1,224 00	854 75	126 00	126 00	915 00	893 05	-	-
Eastern Hampden,	1,737 00	885 05	-	-	1,105 00	495 75	104 00	\$35 00
Essex,	2,186 85	708 35	54 00	31 00	1,345 00	194 25	-	-
Franklin County,	3,903 53	1,811 75	-	-	3,422 00	1,414 75	-	-
Hampshire,	2,468 50	717 50	-	-	1,719 00	433 25	-	-
Hampshire, Franklin and Hampden,	1,988 75	1,093 75	-	-	1,398 50	1,403 50	-	-
Hillside,	1,400 30	812 95	-	-	826 00	588 50	-	-
Hingham (Agricultural and Horticultural),	1,165 00	1,004 45	-	-	809 00	730 50	-	-
Hillsdale,	1,269 50	702 70	-	-	350 00	133 05	34 00	-
Housac Valley,	1,885 75	589 80	-	-	1,383 50	332 50	-	-
Housatonic,	4,149 35	2,677 05	-	-	2,418 00	1,345 00	-	-
Lenox Horticultural,	-	-	-	-	-	-	-	-
Marshfield (Agricultural and Horticultural),	1,490 90	532 40	100 00	-	798 00	163 75	85 50	-
Martha's Vineyard,	1,143 75	787 83	-	-	807 25	425 50	-	-
Massachusetts Horticultural,	7,618 00	5,756 00	135 00	-	-	-	-	-
Massachusetts Society for Promoting Agriculture,	-	-	-	-	-	-	-	-
Middlesex North,	815 05	715 79	-	-	201 00	150 24	-	-
Nantucket,	1,420 75	957 00	-	-	809 75	589 50	-	-
Oxford,	1,634 70	943 75	49 00	20 00	1,202 50	717 25	122 00	84 00
Plymouth County,	623 50	614 25	-	-	318 50	340 50	-	-
Quannapowitt (Association),	2,507 25	816 95	-	-	1,754 00	244 00	-	-
Union (Agricultural and Horticultural),	2,507 25	816 95	30 00	13 00	1,703 00	466 25	-	-
Westport,	1,367 90	834 65	-	-	1,066 00	101 75	-	-
West Taunton,	1,998 00	377 00	-	-	56 75	27 50	-	-
Weymouth (Agricultural and Industrial),	428 55	300 55	-	-	579 00	444 40	-	-
Weymouth,	1,087 25	754 05	-	-	11,129 00	7,080 75	-	-
Worcester,	12,539 00	8,105 75	-	-	935 00	678 85	-	-
Worcester North (Agricultural and Driving Association),	1,385 00	1,061 45	-	-	1,507 00	642 00	-	-
Worcester Northwest (Agricultural and Mechanical Association),	2,022 00	1,002 95	-	-	1,232 50	653 05	81 00	-
Worcester South,	1,823 75	1,040 00	-	-	1,065 25	557 00	30 50	24 00
Worcester County West,	1,845 90	1,123 00	-	-	-	-	-	-
	\$70,840 23	\$41,193 02	\$692 00	\$282 00	\$44,636 50	\$22,337 14	\$541 00	\$143 00

ANALYSIS OF GENERAL PREMIUMS AND GRATUITIES OFFERED AND PAID, AND INSTITUTES HELD, IN THE YEAR ENDING NOV. 30, 1917
 —Continued.

SOCIETIES.	FARM AND GARDEN PRODUCTS.		DOMESTIC MANUFACTURES.		AGRICULTURAL IMPLEMENTS.		GRANGE EXHIBITS.	
	Offered.	Paid.	Offered.	Paid.	Offered.	Paid.	Offered.	Paid.
Amesbury and Salisbury (Agricultural and Horticultural),								
Barnstable County,	\$461 45	\$274 25	\$160 25	\$105 80	-	-	\$90 00	\$40 00
Blackstone Valley,	507 75	293 25	385 25	287 75	-	-	40 00	-
Blackstone Valley,	199 75	168 00	142 00	60 75	-	-	35 00	17 00
Deerfield Valley,	83 25	42 80	94 75	90 90	-	-	-	-
Eastern Hampden,	370 00	229 95	70 00	54 35	-	-	70 00	70 00
Essex,	410 00	259 75	129 85	60 35	\$28 00	\$13 00	220 00	150 00
Franklin County,	407 03	317 15	74 50	79 85	-	-	-	-
Hampshire,	287 00	201 50	53 50	32 75	-	-	110 00	50 00
Hampshire, Franklin and Hampden,	392 25	392 25	108 00	108 00	-	-	90 00	90 00
Highland,	161 30	152 45	110 00	72 00	-	-	-	-
Hillside,	166 00	135 90	140 00	108 05	-	-	50 00	20 00
Lincoln (Agricultural and Horticultural),	679 00	367 00	156 50	187 05	-	-	50 00	15 00
Looseac Valley,	105 25	47 25	397 00	190 05	-	-	-	-
Housatonic,	1,079 90	890 30	481 45	291 75	-	-	130 00	115 00
Lenox Horticultural,								
Marshfield (Agricultural and Horticultural),	257 40	175 30	220 00	163 35	-	-	30 00	30 00
Martha's Vineyard,	167 00	184 05	169 50	178 28	-	-	-	-
Massachusetts Horticultural,	7,440 00	5,713 00	43 00	43 00	-	-	-	-
Massachusetts Society for Promoting Agriculture,								
Middlesex North,	501 55	487 55	112 50	78 00	-	-	-	-
Nantucket,	280 00	144 50	78 00	93 00	20 00	-	-	-
Oxford,	263 75	125 00	118 45	61 50	-	-	50 00	40 00
Plymouth County,	183 00	176 75	72 00	72 00	-	-	50 00	25 00
Quannapowitt (Association),	323 25	160 45	110 00	109 50	-	-	290 00	290 00
Union (Agricultural and Horticultural),	317 83	135 93	117 10	86 37	-	-	30 00	15 00
Westport,	202 50	153 00	94 00	86 75	-	-	15 00	15 00
West Taunton,	208 05	172 70	103 75	100 35	-	-	-	-
Weymouth (Agricultural and Industrial),	227 00	154 70	231 75	124 95	-	-	50 00	30 00
Worcester,	1,120 00	822 50	290 00	202 50	-	-	-	-
Worcester North (Agricultural and Driving Association),	350 00	318 60	100 00	64 00	-	-	-	-
Worcester Northwest (Agricultural and Mechanical Association),	395 00	294 20	-	-	-	-	-	-
Worcester South,	239 25	191 25	151 00	115 70	-	-	120 00	80 00
Worcester County West,	588 25	438 00	161 90	104 00	-	-	-	-
	\$18,266 73	\$13,619 88	\$4,675 00	\$3,412 65	\$48 00	\$13 00	\$1,520 00	\$1,092 00

ANALYSIS OF GENERAL PREMIUMS AND GRATUITIES OFFERED AND PAID, AND INSTITUTES HELD, IN THE YEAR ENDING NOV. 30, 1917
— *Continued.*

SOCIETIES.	ALL OTHER OBJECTS STRICTLY AGRICULTURAL.		Amount paid for Trotting.	Amount paid for Sports and Games.	Amount paid for Other Attractions.	NUMBER OF PERSONS RECEIVING —		Number of Institute Sessions held.	Average Attendance per Session.
	Offered.	Paid.				Premiums.	Gratuities.		
Anesbury and Salisbury (Agricultural and Horticultural),	—	—	—	\$25 00	\$311 72	205	94	4	35
Barnstable County,	\$26 00	\$12 00	\$1,815 00	473 19	131 00	350	261	4	129
Blackstone Valley,	—	—	225 00	171 00	1,009 50	154	9	2	71
Deerfield Valley,	5 00	2 00	780 00	—	125 00	200	—	5	72
Eastern Hampden,	18 00	—	1,400 00	110 60	855 00	135	21	—	—
Essex,	—	—	—	55 00	—	250	16	3	74
Franklin County,	—	—	1,955 00	—	935 00	425	117	2	75
Hampshire,	—	—	490 00	—	—	203	—	1	65
Hampshire, Franklin and Hampden,	—	—	2,345 00	—	—	797	1	1	—
Higland,	—	—	—	—	2,591 90	179	—	3	42
Hillside,	—	—	—	—	—	240	—	2	29
Hingham (Agricultural and Horticultural),	—	—	—	—	—	315	208	1	250
Housac Valley,	40 00	35 00	2,975 00	8 00	400 00	399	—	—	—
Housatonic,	—	—	2,750 00	134 00	750 00	456	41	—	—
Lenox Horticultural,	—	—	—	—	—	16	—	4	109
Marshfield (Agricultural and Horticultural),	—	—	—	—	358 00	115	206	2	83
Martha's Vineyard,	—	—	1,985 77	43 80	50 00	111	148	2	143
Massachusetts Horticultural,	—	—	—	—	—	157	54	—	—
Massachusetts Society for Promoting Agriculture,	—	—	—	—	—	—	—	—	—
Middlesex North,	—	—	—	—	—	252	93	6	160
Nantucket,	62 00	26 00	400 00	20 00	76 20	102	—	3	97
Oxford,	—	—	1,600 00	—	314 20	169	7	1	25
Plymouth County,	—	—	—	—	—	268	98	—	—
Quannapowitt (Association),	—	—	2,164 80	—	607 25	396	—	—	—
Union (Agricultural and Horticultural),	170 00	131 10	576 00	10 00	47 20	121	46	1	225
Westport,	20 50	20 50	—	—	10 00	184	—	—	—
West Taunton,	—	—	—	—	46 00	145	33	1	15
Weymouth (Agricultural and Industrial),	—	—	—	—	—	354	65	3	104
Worcester,	—	—	3,760 00	583 29	4,580 09	326	3	2	88
Worcester North (Agricultural and Driving Association),	—	—	375 00	274 00	908 70	438	22	5	89
Worcester Northwest (Agricultural and Mechanical Association),	—	—	—	—	—	—	—	—	—
Worcester South,	120 00	66 75	1,302 00	—	1,016 95	219	17	3	117
Worcester County West,	—	—	2,800 00	—	1,375 00	96	55	2	21
Worcester County West,	—	—	800 00	50 00	730 00	294	—	5	36
	\$461 50	\$293 35	\$29,892 57	\$1,957 88	\$17,258 71	7,920	1,530	67	2,064

ANALYSIS OF PREMIUMS OFFERED, AWARDED AND PAID TO CHILDREN AND YOUTHS IN THE YEAR ENDING NOV. 30, 1917.

SOCIETIES.	TOTAL PREMIUMS.		FARMS, FARM IMPROVEMENT, ETC.		FARM AND PET STOCK.		FIELD AND GARDEN CROPS.	
	Offered.	Paid.	Offered.	Paid.	Offered.	Paid.	Offered.	Paid.
Ansonbury and Salisbury (Agricultural and Horticultural),	\$338 25	\$235 85	-	-	\$107 25	\$44 00	-	-
Barnstable County,	522 00	279 00	-	-	143 00	66 00	\$51 00	\$21 00
Blackstone Valley,	421 75	255 42	\$10 00	\$10 00	208 25	124 00	-	-
Deerfield Valley,	280 15	155 25	62 00	37 00	50 05	18 00	-	-
Eastern Hampton,	473 40	245 00	-	-	255 00	137 50	2 25	-
Essex,	547 30	229 65	40 00	31 00	130 00	137 25	-	-
Franklin County,	376 00	420 50	-	-	101 00	154 25	-	-
Hampshire,	196 50	104 30	-	-	38 50	24 75	-	-
Hampshire, Franklin and Hampden,	311 00	310 75	19 00	13 00	102 75	102 75	56 50	13 50
Hillside,	269 25	168 40	-	-	81 00	61 75	-	-
Hingham (Agricultural and Horticultural),	251 00	221 75	-	-	121 00	98 00	-	-
Hingham (Agricultural and Horticultural),	279 25	190 75	-	-	-	-	12 00	25 00
Housac Valley,	364 50	157 75	-	-	16 00	10 75	37 00	20 00
Housatonic,	373 25	220 70	-	-	145 50	59 00	-	-
Lenox Horticultural,	191 50	98 25	-	-	-	-	-	-
Marshall (Agricultural and Horticultural),	330 65	166 30	-	-	35 00	10 75	48 00	-
Martha's Vineyard,	288 40	212 95	-	-	67 00	103 75	42 00	10 00
Massachusetts Horticultural,	338 00	338 00	-	-	-	-	-	-
Massachusetts Society for Promoting Agriculture,	-	-	-	-	-	-	-	-
Middlesex North,	187 00	109 00	-	-	22 50	14 00	27 00	27 00
Nantucket,	304 50	162 50	15 00	-	121 75	41 25	-	-
Oxford,	250 00	151 35	-	-	118 00	56 55	-	-
Plymouth County,	59 00	56 05	-	-	15 00	13 25	-	-
Quannapowitt (Association),	220 80	176 50	-	-	-	-	-	-
Union (Agricultural and Horticultural),	250 50	50 40	-	-	86 00	4 50	-	-
Westport,	233 00	45 35	-	-	90 50	-	-	-
West Taunton,	105 50	76 50	-	-	-	-	-	-
Weymouth (Agricultural and Industrial),	222 00	218 15	-	-	68 00	43 00	15 00	14 00
Worcester,	494 00	377 75	-	-	350 00	269 50	-	-
Worcester North (Agricultural and Driving Association),	265 00	248 00	-	-	75 00	68 50	-	-
Worcester Northwest (Agricultural and Mechanical Association),	301 25	251 00	-	-	120 00	107 50	-	-
Worcester South,	490 00	83 75	-	-	185 00	26 50	35 00	-
Worcester County West,	347 30	123 45	-	-	167 50	31 75	16 25	11 00
	\$9,792 00	\$6,230 32	\$146 00	\$91 00	\$3,021 55	\$1,748 80	\$424 00	\$217 50

ANALYSIS OF PREMIUMS OFFERED, AWARDED AND PAID TO CHILDREN AND YOUTHS IN THE YEAR ENDING NOV. 30, 1917 — *Concluded.*

SOCIETIES.	FARM AND GARDEN PRODUCTS.		DOMESTIC MANUFACTURES.		ALL OTHER STRICTLY AGRICULTURAL OBJECTS.	
	Offered.	Paid.	Offered.	Paid.	Offered.	Paid.
Amesbury and Salisbury (Agricultural and Horticultural),						
Barnstable County,	\$142 00	\$102 85	—	—	\$89 00	\$89 00
Blackstone Valley,	136 00	67 50	\$154 00	\$97 50	38 00	27 00
Deerfield Valley,	91 25	59 42	102 25	52 00	10 00	10 00
Eastern Hampden,	83 85	45 50	34 00	26 75	50 25	28 00
Essex,	200 50	103 00	15 65	4 50	38 00	—
Franklin County,	148 50	77 10	100 80	64 30	—	—
Hampshire,	119 00	210 50	58 00	35 50	100 00	29 25
Hampshire, Franklin and Hampden,	52 30	36 05	29 20	17 00	—	—
Hingham,	109 00	169 00	39 25	39 00	—	—
Hillside,	113 75	61 05	74 50	45 60	—	—
Hingham (Agricultural and Horticultural),	40 00	23 45	78 00	73 30	—	—
Hoosac Valley,	118 00	70 35	124 25	100 40	—	—
Housatonic,	348 50	147 00	—	—	—	—
Lenox Horticultural,	98 95	64 95	46 80	20 75	—	—
Marshfield (Agricultural and Horticultural),	34 00	29 75	47 50	8 50	110 00	60 00
Martha's Vineyard,	145 65	86 25	72 75	44 40	29 25	24 90
Massachusetts Horticultural,	81 40	61 95	98 00	37 25	—	—
Massachusetts Society for Promoting Agriculture,	332 00	332 00	6 00	6 00	—	—
Middlesex North,	—	—	—	—	—	—
Nantucket,	82 50	83 00	55 00	35 50	—	39 50
Oxford,	90 50	69 50	69 75	21 75	7 50	8 00
Plymouth County,	66 00	39 80	28 50	24 50	37 50	30 50
Quannapowitt (Association),	18 75	18 60	25 25	24 20	—	—
Union (Agricultural and Horticultural),	119 45	117 55	71 35	43 95	30 00	15 00
Westport,	131 00	35 50	23 00	10 40	4 50	—
West Taunton,	80 00	34 00	62 50	11 35	—	—
Weymouth (Agricultural and Industrial),	69 50	58 50	36 00	18 00	—	—
Worcester,	77 20	109 00	21 50	17 85	40 30	34 30
Worcester North (Agricultural and Driving Association),	112 00	90 75	17 00	4 50	15 00	13 00
Worcester Northwest (Agricultural and Mechanical Association),	95 00	88 40	95 00	91 10	—	—
Worcester South,	86 25	53 50	—	—	95 00	90 00
Worcester County West,	59 20	35 75	120 80	21 50	—	—
	135 25	55 25	28 30	25 45	—	—
	\$3,677 25	\$2,658 77	\$1,828 90	\$1,024 80	\$694 30	\$489 45

DIRECTORY

OF THE

AGRICULTURAL AND SIMILAR ORGANIZATIONS

OF MASSACHUSETTS

1918

STATE BOARD OF AGRICULTURE, 1918.

Members ex Officiis.

HIS EXCELLENCY SAMUEL W. McCALL.

KENYON L. BUTTERFIELD, *President Massachusetts Agricultural College.*

LESTER H. HOWARD, *Commissioner of Animal Industry.*

F. WILLIAM RANE, *State Forester.*

WILFRID WHEELER, *Secretary of the Board.*

Members appointed by the Governor and Council.

Term expires¹

HENRY M. HOWARD of Newton (P. O., West Newton),	1920
EDWARD E. CHAPMAN of Ludlow,	1918
FRANK P. NEWKIRK of Easthampton,	1919

Members chosen by the Incorporated Societies.

<i>Amesbury and Salisbury (Agricultural and Horticultural),</i>	A. WILLIS BARTLETT of Salisbury,	1920
<i>Barnstable County,</i>	JOHN BURSLEY of Barnstable (P. O., West Barnstable),	1918
<i>Blackstone Valley,</i>	JACOB A. WILLIAMS of Northbridge,	1920
<i>Deerfield Valley,</i>	STEPHEN W. HAWKES of Charlemont,	1919
<i>Eastern Hampden,</i>	OMER E. BRADWAY of Monson,	1920
<i>Essex,</i>	GEORGE L. AVERILL of Andover,	1919
<i>Franklin County,</i>	GEORGE E. TAYLOR, JR., of Shelburne,	1918
<i>Hampshire,</i>	HOWARD A. PARSONS of Amherst (P. O., North Amherst),	1918
<i>Hampshire, Franklin and Hampden,</i>	CLARENCE E. HODGKINS of Northampton,	1920
<i>Highland,</i>	HARRY A. FORD of Dalton,	1919
<i>Hillside,</i>	MILTON S. HOWES of Cummington (P. O., Swift River),	1919
<i>Hingham (Agricultural and Horticultural),</i>	URBAN S. BATES of Hingham,	1920
<i>Hoosac Valley,</i>	NATHAN B. FLOOD of North Adams,	1920
<i>Housatonic,</i>	FRED M. FORD of Sheffield,	1920
<i>Lenox Horticultural,</i>	ALFRED H. WINGETT of Lenox,	1919
<i>Marshfield (Agricultural and Horticultural),</i>	WALTER H. FAUNCE of Kingston,	1920
<i>Martha's Vineyard,</i>	JAMES F. ADAMS of West Tisbury,	1918
<i>Massachusetts Horticultural,</i>	SAMUEL J. GODDARD of Framingham,	1920
<i>Massachusetts Society for Promoting Agriculture,</i>	NATHANIEL I. BOWDITCH of Framingham,	1920
<i>Middlesex North,</i>	GEORGE W. TRULL of Tewksbury (P. O., Lowell, R. F. D.),	1919
<i>Nantucket,</i>	CHARLES E. BURGESS of Nantucket,	1920
<i>Oxford,</i>	JOHN F. FREELAND of Sutton,	1918

¹ First Tuesday in December.

	Term expires ¹
<i>Plymouth County</i> , ERNEST LEACH of Bridgewater,	1919
<i>Quannapowitt</i> , CALVERT H. PLAYDON, D.V.S., of Reading,	1918
<i>Union</i> , EDWIN F. GOODWIN of Chester (P. O., Huntington),	1920
<i>Westport</i> , CHARLES R. TALLMAN of Westport (P. O., South Westport),	1920
<i>West Taunton</i> , CHARLES I. KING of Taunton,	1919
<i>Weymouth (Agricultural and Horticultural)</i> , HOWARD H. JOY of Weymouth (P. O., South Weymouth),	1920
<i>Worcester</i> , CHARLES H. ELLSWORTH of Worcester,	1919
<i>Worcester North (Agricultural and Driving Association)</i> , HENRY D. CLARK, D.V.S., of Fitchburg,	1920
<i>Worcester Northwest (Agricultural and Mechanical)</i> , ALBERT ELLSWORTH of Athol,	1918
<i>Worcester South</i> , WILLIAM E. PATRICK of Warren,	1918
<i>Worcester County West</i> , LOUIS H. RUGGLES of Hardwick,	1919

**Member chosen by the Massachusetts Federation of County Leagues and
Farm Bureaus.**

L. L. RICHARDSON of Leominster,	1918
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¹ First Tuesday in December.

ORGANIZATION OF THE BOARD.

OFFICERS.

<i>President,</i>	His EXCELLENCY SAMUEL W. McCALL, <i>ex officio</i>
<i>First Vice-President,</i>	JOHN BURSLEY of Barnstable.
<i>Second Vice-President,</i>	HARRY A. FORD of Dalton.
<i>Secretary,</i>	WILFRID WHEELER of Concord.

Office, Room 136, State House, Boston.

COMMITTEES.

Executive Committee.

Messrs. JOHN BURSLEY of Barnstable.
 O. E. BRADWAY of Monson.
 GEORGE W. TRULL of Tewksbury.
 WILLIAM E. PATRICK of Warren.
 SAMUEL J. GODDARD of Framing-
 ham.
 JACOB A. WILLIAMS of Northbridge.
 A. WILLIS BARTLETT of Salisbury.
 HENRY M. HOWARD of Newton.
 GEORGE E. TAYLOR, Jr., of Shel-
 burne.

Committee on Agricultural Societies.

Messrs. O. E. BRADWAY of Monson.
 ALBERT ELLSWORTH of Athol.
 JACOB A. WILLIAMS of Northbridge.
 CHARLES I. KING of Taunton.
 CHARLES E. BURGESS of Nantucket.
 H. A. PARSONS of Amherst.

Committee on Domestic Animals, Poultry and Dairy Products.

Messrs. WILLIAM E. PATRICK of Warren.
 HENRY D. CLARK of Fitchburg.
 JOHN F. FREELAND of Sutton.
 HARRY A. FORD of Dalton.
 GEORGE L. AVERILL of Andover.

Committee on the Massachusetts Agri- cultural College and the Massachu- setts Agricultural Experiment Sta- tion.

Messrs. JOHN BURSLEY of Barnstable.
 FRANK P. NEWKIRK of Easthamp-
 ton.
 WILLIAM E. PATRICK of Warren.
 L. L. RICHARDSON of Leominster.
 HOWARD A. PARSONS of Amherst.

Committee on Orcharding and Fruit Growing.

Messrs. SAMUEL J. GODDARD of Framing-
 ham.
 ALFRED H. WINGETT of Lenox.
 STEPHEN W. HAWKES of Charle-
 mont.
 HENRY M. HOWARD of Newton.
 FRED M. FORD of Sheffield.

Committee on Grasses and Forage Crops.

Messrs. GEORGE E. TAYLOR, Jr., of Shel-
 burne.
 URBAN S. BATES of Hingham.
 NATHANIEL I. BOWDITCH of Fram-
 ingham.
 CALVERT H. PLAYDON of Reading.
 CHARLES H. ELLSWORTH of Worces-
 ter.

Committee on Markets and Transpor- tation.

Messrs. A. WILLIS BARTLETT of Salisbury.
 CHARLES I. KING of Taunton.
 NATHAN B. FLOOD of North Adams.
 EDWARD E. CHAPMAN of Ludlow.
 CHARLES R. TALLMAN of South
 Westport.

Committee on Farm Tools and Ma- chinery.

Messrs. JACOB A. WILLIAMS of Northbridge.
 ERNEST LEACH of Bridgewater.
 CLARENCE E. HODGKINS of North-
 ampton.
 HOWARD H. JOY of Weymouth.
 MILTON S. HOWES of Cummington.

Committee on Institutes and Public Meetings.

MESSRS. GEORGE W. TRULL of Tewksbury.
 JAMES F. ADAMS of West Tisbury.
 GEORGE E. TAYLOR, Jr., of Shelburne.
 L. L. RICHARDSON of Leominster.
 WALTER H. FAUNCE of Kingston.

Committee on Irrigation and Drainage.

MESSRS. HENRY M. HOWARD of Newton.
 CLARENCE E. HODGKINS of Northampton.
 LOUIS H. RUGGLES of Hardwick.
 A. WILLIS BARTLETT of Salisbury.
 EDWIN F. GOODWIN of Chester.

DAIRY BUREAU.

MESSRS. GEORGE E. TAYLOR, Jr., of Shelburne, 1920; O. E. BRADWAY of Monson, 1918;
 GEORGE W. TRULL of Tewksbury, 1919.

Executive Officer, WILFRID WHEELER of Concord.
General Agent, P. M. HARWOOD of Barre.
 Office, Room 136, State House.

STATE NURSERY INSPECTOR.

R. HAROLD ALLEN of Fall River.

STATE ORNITHOLOGIST.

EDWARD HOWE FORBUSH of Westborough.

STATE INSPECTOR OF APIARIES.

BURTON N. GATES, Ph.D., of Amherst.

SPECIALISTS.

<i>Chemist,</i>	J. B. LINDSEY,	Amherst.
<i>Entomologist,</i>	H. T. FERNALD,	Amherst.
<i>Botanist,</i>	A. VINCENT OSMUN,	Amherst.
<i>Pomologist,</i>	F. C. SEARS,	Amherst.
<i>Veterinarian,</i>	JAMES B. PAIGE,	Amherst.
<i>Engineer,</i>	WILLIAM WHEELER,	Concord.
<i>Agricultural Club Work,</i>	GEORGE L. FARLEY,	Amherst.

MASSACHUSETTS AGRICULTURAL COLLEGE.

*Location, Amherst, Hampshire County.***The Corporation.**

MEMBERS OF THE CORPORATION.	Term expires
DAVIS R. DEWEY of Cambridge,	1919
JOHN F. GANNON of Worcester,	1919
ARTHUR G. POLLARD of Lowell,	1920
GEORGE H. ELLIS of West Newton,	1920
ELMER D. HOWE of Marlborough,	1921
EDMUND MORTIMER of Grafton,	1921
NATHANIEL I. BOWDITCH of Framingham,	1922
WILLIAM WHEELER of Concord,	1922
CHARLES A. GLEASON of New Braintree,	1923
JAMES F. BACON of Boston,	1923
FRANK GERRETT of Greenfield,	1924
HAROLD L. FROST of Arlington,	1924
CHARLES H. PRESTON of Danvers,	1925
FRANK A. HOSMER of Amherst,	1925

MEMBERS EX OFFICIO.

HIS EXCELLENCY SAMUEL W. MCCALL,	<i>President of the Corporation.</i>
KENYON L. BUTTERFIELD,	<i>President of the College.</i>
PAYSON SMITH,	<i>State Commissioner of Education.</i>
WILFRID WHEELER,	<i>Secretary of the State Board of Agriculture.</i>

OFFICERS OF THE CORPORATION.

HIS EXCELLENCY GOVERNOR SAMUEL W. MCCALL of Winchester,	<i>President.</i>
CHARLES A. GLEASON of New Braintree,	<i>Vice-President.</i>
WILFRID WHEELER of Concord,	<i>Secretary.</i>
FRED C. KENNEY of Amherst,	<i>Treasurer.</i>
CHARLES A. GLEASON of New Braintree,	<i>Auditor.</i>

EXAMINING COMMITTEE OF OVERSEERS FROM THE STATE BOARD OF AGRICULTURE.

JOHN BURSLEY of Barnstable.
 FRANK P. NEWKIRK of Easthampton.
 WILLIAM E. PATRICK of Warren.
 L. L. RICHARDSON of Leominster.
 HOWARD A. PARSONS of Amherst.

MASSACHUSETTS AGRICULTURAL EXPERIMENT STATION.

WILLIAM P. BROOKS, Ph.D.,	<i>Director.</i>
JOSEPH B. LINDSEY, Ph.D.,	<i>Vice-Director.</i>
FRANK A. WAUGH, M.Sc.,	<i>Horticulturist.</i>
F. C. SEARS,	<i>Pomologist.</i>
HENRY T. FERNALD, Ph.D.,	<i>Entomologist.</i>
JAMES B. PAIGE, B.Sc., D.V.S.,	<i>Veterinarian.</i>
JOHN E. OSTRANDER, A.M., C.E.,	<i>Meteorologist.</i>

AGRICULTURAL SOCIETIES INCORPORATED BY SPECIAL ACT OF THE LEGISLATURE, AND REPRESENTED ON THE BOARD OF AGRICULTURE.

NAME.	PRESIDENT.	SECRETARY.	TREASURER.
Amesbury and Salisbury, ¹ Barnstable County,	A. Willis Bartlett, Salisbury. John Bursley, Barnstable (P. O., West Barnstable).	Joseph E. Trombla, Amesbury. Marcus N. Harris, Barnstable.	Willis F. Austin, Amesbury. Henry C. Davis, Cummaquid.
Blackstone Valley,	W. A. L. Bazeley, Uxbridge.	M. R. Sharpe, Uxbridge.	Charles A. Barton, Uxbridge.
Deerfield Valley,	Robert E. Williams, Buckland.	Francis W. Avery, Charlemont.	Horace E. Warfield, Charlemont.
Eastern Hampden,	O. E. Bradway, Monson.	Charles W. Chamberlin, Palmer.	Sammel W. Lyon, Palmer.
Essex,	Herbert W. Mason, Ipswich.	Walter H. Brown, West Peabody.	William S. Nichols, Salem.
Franklin County,	Frederick W. Burnham, Greenfield.	J. H. Murphy, Greenfield.	Ezra C. Wilcox, Greenfield.
Hampshire,	William H. Atkins, South Amherst.	W. Arthur Wiley, Amherst.	W. Arthur Wiley, Amherst.
Hampshire, Franklin and Hampden, Highland,	John E. Porter, Hatfield. Edwin H. Alderman, Middlefield (P. O., Chester).	Alvertus J. Morse, Northampton. John T. Bryan, Middlefield (P. O., Chester).	Alvertus J. Morse, Northampton. Wesley A. Olds, Middlefield.
Hillside,	W. Henry Morey, Cummington.	Herbert G. Streeter, Cummington.	Howard E. Drake, Cummington.
Hingham, ¹	Edgar M. Lane, Hingham Center.	Harry W. Young, South Hingham.	Harry F. Zahn, Hingham Center.
Hosue Valley,	Frank D. Stafford, North Adams.	William G. Carter, North Adams.	C. M. Ottman, North Adams.
Housatonic,	Peter I. Adams, Stockbridge (P. O., Housatonic).	Joseph H. Maloney, Great Barrington.	George L. Taylor, Great Barrington.
Lenox Horticultural,	Robert Scott, Pittsfield.	Henry Heerenmans, Lenox.	Alfred J. Loveless, Lenox.
Marshfield, ¹	Thomas W. Lawson, Boston.	M. Herman Kent, Marshfield.	M. Herman Kent, Marshfield.
Martha's Vineyard,	Henry B. Davis, Chilmank.	Leroy W. Luce, Chilmank.	George Hunt Luce, West Tisbury.
Massachusetts Horticultural,	Richard M. Saltonstall, Newton.	William P. Rich, 300 Massachusetts Ave., Boston.	Walter Hunnewell, 87 Milk Street, Boston.
Massachusetts Society for Promoting Agri- culture,	Charles Sprague Sargent, Brookline.	General Francis Henry Appleton, Peabody.	Nathaniel I. Bowditch, Framingham.
Middlesex North,	George W. Trull, Tewksbury (P. O., Lowell, R. F. D.).	George H. Upton, Lowell.	John A. Weinbeck, Lowell.

Nantucket,	.	.	.	.	.	.	John H. Bartlett, Nantucket.	Josiah H. Murphey, Nantucket.	Benjamin F. Worth, Nantucket.
Oxford,	.	.	.	.	.	.	Charles N. Turner, Oxford.	James H. Carling, Oxford.	George E. Chaffee, Oxford.
Plymouth County,	.	.	.	.	.	.	Ernest Leach, Bridgewater.	Howard B. Wilbur, West Bridgewater.	Howard B. Wilbur, West Bridgewater.
Quannapowitt,	.	.	.	.	.	.	Henry A. Upton, North Reading.	E. Horace Perley, Wakefield.	Arthur W. Coolidge, Norwood.
Union,	.	.	.	.	.	.	J. P. Haley, Blandford.	C. E. Whitney, Blandford.	C. R. Ripley, Blandford.
Westport,	.	.	.	.	.	.	Charles R. Tallman, South Westport.	Charles R. Tallman, South Westport.	John Allen, Westport.
West Taunton,	.	.	.	.	.	.	George H. Gould, Taunton.	Charles I. King, Taunton.	Whitman Chase, Taunton.
Weymouth (Agricultural and Industrial),	.	.	.	.	.	.	John W. Linnahan, South Weymouth.	M. C. Sproul, South Weymouth.	D. Frank Daly, South Weymouth.
Worcester,	.	.	.	.	.	.	Walter D. Ross, Worcester.	B. Durell, Worcester.	Leander F. Herriek, Worcester.
Worcester North (Agricultural and Driving Association).	.	.	.	.	.	.	L. L. Richardson, Leominster.	E. H. Bricker, Fitchburg.	E. H. Bricker, Fitchburg.
Worcester Northwest (Agricultural and Mechanical).	.	.	.	.	.	.	John A. McGregor, Athol.	Walter B. Lawton, Athol.	Henri C. Fay, Athol.
Worcester South,	.	.	.	.	.	.	Frank F. Phinney, Warren.	Elliot M. Clemence, Southbridge.	Herbert N. Shepard, Warren.
Worcester County West,	.	.	.	.	.	.	William A. Gaston, Shawmut Bank Building, Boston and Barre.	John L. Smith, Barre.	John S. Rice, Barre.

¹ And horticultural.

HORTICULTURAL SOCIETIES.

NAME.	LOCATION.	PRESIDENT.	SECRETARY.
Hampden County,	Springfield,	J. Alden Davis, 36 Groveland St., Springfield.	Marshall Headle, 458 Dickinson St., Springfield.
Houghton,	Lynn,	Dr. Frank L. Whipple, 61 Maple St., Lynn.	Miss Mary J. Seanton, 15 Wells Pl., Lynn.
Medford,	Medford,	Miss Laura P. Patten, Brooks St., West Medford.	Mrs. Ruth W. Randall, 53 Forest St., Medford.
Medrose Horticultural and Improvement,	Medrose,	Edward S. Page, 270 Porter St., Melrose.	Mrs. Ralph O. Stantial, 55 Meridian St., Melrose.
New Bedford,	New Bedford,	Leonard J. Hathaway, Jr., Clifford St., New Bedford.	Jeremiah N. Taber, 888 Rockdale Ave., New Bedford.
Worcester County,	Worcester,	Charles Greenwood, 193 May St., Worcester.	Herbert A. Kinney, Olean St., Worcester.

FARMERS' AND MECHANICS' CLUBS AND ASSOCIATIONS.

Belchertown,	Belchertown,	D. F. Shumway, Belchertown.	R. E. Fairchild, Belchertown.
Bolton, ¹	Bolton,	Gilbert H. Wheeler, Bolton.	Harry W. Butts, Bolton.
Holden,	Holden,	Wm. S. Piper, Holden.	Frank C. Hubbard, Jefferson.
Needham, ¹	Needham,	George N. Smith, Wellesley Hills.	Cyrus F. Jenness, 69 Moffatt Rd., Waban.
Pepperell,	Pepperell,	William E. Chapman, Pepperell.	Leroy A. Shattuck, Pepperell.
Shrewsbury,	Shrewsbury,	E. A. Bartlett, Shrewsbury.	Fred J. Stone, Shrewsbury.
Westminster, ¹	Westminster,	Frank W. Derby, Westminster.	Albert E. Gates, Westminster.

¹ Association.

FARMERS' CO-OPERATIVE EXCHANGES.

Abington Strawberry Growers' Co-operative Exchange.	Abington,	Bernice E. Blanchard, Hancock St., Abington.	Chas. O'Bloxlham, Hancock St., Abington.
Amherst Co-operative Supply Association,	Amherst,	Prof. C. A. Peters, Amherst.	O. F. Wilkinson, Amherst.
Ashfield Farmers' Co-operative Exchange,	Ashfield,	Raymon Howes, Ashfield.	L. H. Bronson, Ashfield.
Ayer Farmers' Co-operative Exchange,	Ayer,	Dr. Austin Peters, Harvard.	R. G. Davis (clerk), Ayer.
Barre Farmers' Co-operative Exchange,	Barre,	Geo. F. Smith, Barre.	H. B. Read, Barre.
Bedford Co-operative Corporation,	Bedford,	-	Elihu G. Loomis (clerk), 15 State St., Boston.
Brimfield Farmers' Co-operative Exchange,	Brimfield,	O. E. Parker, Brimfield. ¹	H. C. Maddocks, Brimfield.
Colrain Fruit Growers' Co-operative Association,	Colrain,	Walter H. Kemp, Colrain.	A. Browning Harris, West Leyden.
Cotuit Grangers' Co-operative Exchange,	Cotuit,	George L. Hamblin, Marston's Mills, Cape Cod.	Henry Morse, Osterville, Cape Cod.
Deerfield and Sunderland Farmers' Co-operative Exchange.	Deerfield and Sunderland,	William L. Harris, Deerfield.	E. C. Fairbank (acting secretary), South Deerfield.
East Bridgewater Farmers' Co-operative Exchange, Inc.	East Bridgewater,	Arthur L. Leland, East Bridgewater.	Ralph W. Seymour, East Bridgewater.
Essex County Co-operative Farming Association.	Essex County,	Geo. von L. Meyer, ² 89 State St., Boston.	Neil W. Rice, 55 Congress St., Boston.
Hardwick Farmers' Co-operative Exchange,	Hardwick,	Moses R. Paige, Hardwick.	O. A. Tuttle, Gilbertville.
Heath Farmers' Co-operative Exchange,	Heath,	W. E. Gleason, Heath.	M. H. Sherman, Heath.
Higland Co-operative Fruit Exchange,	Higland,	Elmer D. Howe, Fairview Farm, Marlborough.	Ralph F. Barnes, Old Homestead Fruit Farm, Marlborough.
Lowell Suburban Dairy Association,	Lowell,	Bert A. Cluff, R. D. 2, Lowell.	Harry M. Fox, 1909 Bridge St., Dracut.
Richmond Farmers' Co-operative Exchange,	Richmond,	L. Pomeroy Russell, Richmond.	Jesse H. Fairfield, Jr., Richmond.
Stockbridge Farmers' Co-operative Exchange,	Stockbridge,	Henry McBurney, Stockbridge.	E. B. Owen, Stockbridge.
Sutton Farmers' Co-operative Company,	Sutton,	Clarence E. Wallace, West Sutton.	Geo. L. Stockwell, Sutton.
Upton Farmers' Co-operative Exchange,	Upton,	John E. Dearth, West Upton.	Harriet J. Richardson, East Upton.
Warren Farmers' Co-operative Exchange,	Warren,	Herbert N. Shepard, Warren.	Edw. D. Sullivan, Warren.
Worcester County Farmers' Co-operative Exchange.	Worcester County,	Charles L. Wilder, Lancaster.	N. P. Tyler, Sterling Junction.

¹ Requested Legislature to dissolve same.² Deceased.

FARMERS' CLUBS.

NAME.	LOCATION.	PRESIDENT.	SECRETARY.
Boxborough,	Boxborough,	Richard Y. Nelson, West Acton, R. F. D.	George W. Burroughs, West Acton.
Buckland,	Buckland,	Hezekiah E. Ward, Buckland.	F. L. Stacy, Buckland.
East Charlemont,	East Charlemont,	William B. Avery, East Charlemont.	Miss Jennie R. Ballard, East Charlemont.
Easthampton,	Easthampton,	James A. Sturges, 92 Northampton St., Easthampton.	Fred L. Frost, Town Farm, Easthampton.
Easton,	Easton,	Wilmarth P. Howard, South Easton.	Edward Barrett, South Easton.
Franklin,	Franklin,	George L. Kerr, Franklin.	Ernest B. Parmenter, Franklin.
Halifax,	Halifax,	Rev. James T. Thomas, Halifax.	Mrs. Carrie A. Hayward, Halifax.
New Braintree,	New Braintree,	D. C. Wetherell, New Braintree.	Mrs. J. T. Greene, New Braintree.
Oakham,	Oakham,	Donald A. Rutherford, Oakham.	Frank E. Davis, Oakham.
South Bristol,	New Bedford,	Elmer M. Poole, North Dartmouth.	Allen Russell, New Bedford (Acushnet station).
Tatnuck,	Worcester,	Geo. H. Kinney, 5 Guild Rd., Worcester, ter.	Mrs. Sue M. Austin, 10 Moore Ave., Worcester.
Upton,	Upton,	Frank P. Deerow, West Upton.	Edward B. Newton, Upton.
West Brookfield,	West Brookfield,	Wm. L. Day, Warren.	Sumner H. Reed, Brookfield.

POULTRY ASSOCIATIONS.

Abington Poultry Association, Inc.,	.	.	Abington,	.	.	Chas. E. Allen, 122 Walnut St., Abington.	Leroy Grinnell, 196 Chapel St., Abington.
Amherst Poultry Association, Inc.,	.	.	Amherst,	.	.	George H. Cadwell, West Pelham.	M. G. Harvey, Amherst.
Attleboro Poultry Association, Inc.,	.	.	Attleboro,	.	.	William H. Saart, Foxborough.	Leonard Hinds, 78 Dennis St., Attleboro.
Boston Poultry Association, Inc.,	.	.	Boston,	.	.	John Lovell, Chestnut Hill.	W. B. Atherton, 36 Bromfield St., Boston.
Dalton Poultry, Pigeon and Pet Stock Association, Inc.	.	.	Dalton,	.	.	Charles Wilner, Coltsville.	Walter C. Reed, Dalton.
Deerfield Valley Poultry Association,	.	.	Charltonmont,	.	.	William B. Avery, Charlemonit.	Francis W. Avery, Charlemonit.
Essex County Poultry Association, Inc.,	.	.	Essex County,	.	.	J. D. Barnes, Wenham.	Arthur Elliot, Peabody.
Eastern Massachusetts Poultry and Pigeon Association, Inc.	.	.	Everett,	.	.	W. B. Sanders, 47a Broadway, Everett.	S. J. Godfrey, 77 Clark Ave., Chelsea.
Gloucester Poultry Association, Inc.,	.	.	Gloucester,	.	.	Willard Mitchell, 18 Gloucester Ave., Gloucester.	Ernest Deacon, Annisquam.
Holyoke Poultry and Pet Stock Association, Inc.,	.	.	Holyoke,	.	.	A. C. Chapin, 354 Chicopee St., Chicopee.	John W. Young, 1 Sonoma Pl., Holyoke.
Lawrence Poultry Association,	.	.	Lawrence,	.	.	James Boardman, 80 Haverhill St., Andover.	William Pangburn, 365 Water St., Lawrence.
Lenox Poultry Association, Inc.,	.	.	Lenox,	.	.	William J. Welsh, Lenox.	George A. Mole, Lenox.
Mansfield Poultry, Pigeon and Pet Stock Association.	.	.	Mansfield,	.	.	C. H. Budlong, Mansfield.	Laura Faye Howe, 56 Draper Ave., Mansfield.
Massachusetts Poultry Society,	.	.	Worcester,	.	.	Charles E. Allen, 8 Beacon St., Boston.	Charles H. Wood, 715 State Mutual Building, Worcester.
Milford Poultry Association, Inc.,	.	.	Milford,	.	.	J. F. Despaux, West Upton.	W. H. Pyne, Milford.
New England Poultry Association, Inc.,	.	.	Greenfield,	.	.	Solon H. Stone, 12 Walnut St., Greenfield.	Frank J. Hochrein, 21 Riddell St., Greenfield.
Northern Berkshire Poultry Association,	.	.	North Adams,	.	.	A. F. Dodge, Pittsfield.	Albert Whitney, 29 Nelson St., North Adams.
Northampton Poultry Association, Inc.,	.	.	Northampton,	.	.	M. G. Fuller, 253 Prospect St., Northampton.	Sylvester E. Hoxie, 44 North Elm St., Northampton.
Norwood Poultry Association, Inc.,	.	.	Norwood,	.	.	Willis C. Fuller, 402 Washington St., Norwood.	Edward D. Baker, 88 Nichols St., Norwood.

POULTRY ASSOCIATIONS — *Concluded.*

NAME.	LOCATION.	PRESIDENT.	SECRETARY.
Quannapowitt Poultry Association, Inc., . .	Wakefield, . . .	W. W. Greenough, Pleasant St., Wakefield.	W. S. Goodwin, Greenwood.
Shelburne Falls Poultry Association, Inc., .	—	—	—
Southern Massachusetts Poultry and Pet Stock Association, Inc.	New Bedford, . . .	Bancroft Winsor, Acushnet.	Dr. S. D. Perry, 736 Pleasant St., New Bedford.
South Shore Poultry Club, . . .	North Hanover, . . .	Fred Cann, R.F.D., Route 1, Rockland.	Arthur W. Sides, R. F. D., Route 1, Rockland.
Springfield Poultry Club, Inc., . . .	Springfield, . . .	J. H. Whitcomb, P. O. Box 1226, Springfield.	G. L. Collesler, P. O. Box 1226, Springfield.
Taunton Poultry Association, Inc., . . .	Taunton, . . .	Harry W. Pardey, Segreganset.	Walton W. Viles, Raynham Center.
Worcester North Poultry Association, . . .	Fitchburg and vicinity, . . .	Charles L. Wilder, Lancaster.	Alanson A. Chace, 43 Cedar St., Clinton.
Worcester Poultry Association, Inc., . . .	Worcester, . . .	Louis T. C. Loring, Shrewsbury.	Charles H. Wood, 715 State Mutual Building, Worcester.

BEEKEEPERS' SOCIETIES AND ASSOCIATIONS.

Berkshire County Beekeepers' Association, . .	Berkshire County, . . .	Levi D. Case, Lenox Ave., Pittsfield.	Harry E. Hume, Dalton.
Eastern Massachusetts Society of Beekeepers, .	Boston, . . .	S. Lothrop Davenport, Independent Agricultural School, Hathorne.	Thomas J. Hawkins, 4 Emery St., Everett.
Federated Massachusetts Beekeepers' Association.	The State, . . .	O. M. Smith, Florence.	Miss Dorothy Quincy Wright, Chelmsford.
German Bee Society, . . .	Lawrence and Methuen, . .	Robert Hoffman, 42 Brook St., Lawrence.	August Seiferth, 31 Lippold St., Lawrence.
Hampshire, Hampden and Franklin Beekeepers' Association.	Hampshire, Hampden and Franklin counties.	O. M. Smith, Florence.	Burton N. Gates, Amherst.
Massachusetts Society of Beekeepers, . . .	The State, . . .	Frank W. Frisbee, 46 Stonington St., North Andover.	Philip S. Crichton, 2 Carver St., Cambridge.
Worcester County Beekeepers' Association, . .	Worcester, . . .	Herbert E. Bradish, West Boylston.	Miss Josephine Morse, South Lancaster.

FARM BUREAUS AND COUNTY IMPROVEMENT LEAGUES.

Berkshire County Farm Bureau,	Berkshire County,	Fred G. Crane, Dalton.	H. A. Dunbar, Pittsfield.
Bristol County Agricultural School, Farm Bureau Department.	Segreganset,	Elmer M. Poole, North Dartmouth.	Geo. H. Gilbert, Segreganset.
Cape Cod Farm Bureau,	Barnstable County,	Thos. C. Thacher, 131 State St., Boston.	H. C. Davis, Cumnaquid.
Franklin County Farm Bureau,	Franklin County,	Joseph W. Stevens, Greenfield.	Fred C. Abercrombie, Turners Falls.
Hampden County Improvement League,	Hampden County,	H. A. Moses, Russell.	C. A. Gammons, 244 Main St., Springfield.
Hampshire County Farm Bureau,	Hampshire County,	Leslie R. Smith, Northampton.	Ernest Russell, Hadley.
Middlesex County Farm Bureau,	Middlesex County,	N. I. Bowditch, Framingham.	Gordon Hutchins, Concord.
Norfolk County Agricultural School, Farm Bureau Department.	Walpole,	E. F. Richardson, Millis.	F. W. Kingman, Walpole.
Plymouth County Farm Bureau,	Plymouth County,	W. H. Wyman, North Abington.	Warren S. Baker (county agent), Brockton.
Worcester County Farm Bureau,	Worcester County,	J. Lewis Ellsworth, Worcester.	Frank Kilmer, 80 Webster St., Worcester.

COUNTY AGRICULTURAL SCHOOLS.

NAME.	LOCATION.	DIRECTOR.	COUNTY AGENT.
Essex County Agricultural School,	Hathorne,	F. A. Smith, Hathorne.	R. H. Gaskill, Hathorne.
Bristol County Agricultural School,	Segreganset,	G. H. Gilbert, Segreganset.	W. L. Ide, Segreganset.
Norfolk County Agricultural School,	Walpole,	F. W. Kingman, Walpole.	W. A. Munson, Walpole.

MISCELLANEOUS.

NAME.	LOCATION.	PRESIDENT.	SECRETARY.
Boston Market Gardeners' Association, . . .	Boston, . . .	J. Winthrop Stone, Lincoln St., Watertown.	Josiah B. Shurtleff, Revere.
Brockton Agricultural Society, . . .	Brockton, . . .	W. B. Cross, 956 Pleasant St., Brockton.	Perley G. Flint, 45 Emerson Ave., Brockton.
Cape Cod Cranberry Growers' Association, . . .	Wareham, . . .	James T. Hennessy, Wareham.	Lemuel C. Hall, Wareham.
Cape Cod Strawberry Growers' Association, . . .	Falmouth, . . .	John J. DeMello, East Falmouth.	Manuel Vieira, East Falmouth.
Eastern States Agricultural Industrial League, . . .	Springfield, . . .	Horace A. Moses, Springfield.	John A. Scheuerle, 292 Worthington St., Springfield.
Easthampton Milk Producers' Association, . . .	Easthampton, . . .	R. H. Clapp, Clapp St., Easthampton.	J. A. MacAustin, Glendale St., Easthampton.
Franklin Harvest Club, . . .	Franklin and Hampshire, . . .	Wilbur M. Purrington, Haydenville.	Herbert N. Loring, 27 Franklin St., Northampton.
Gardeners' and Florists' Club of Boston, . . .	Boston, . . .	Andrew K. Rogers, Hill Top Farm, Readville.	William N. Craig, Faulkner Farm, Brookline.
Hampton County Fair, Inc., . . .	Holyoke, . . .	Dr. Thos. J. Shinkwin, 2 Main St., Holyoke.	David H. Young, Holyoke, P. O. Box 85.
Hampton County Farmers' Exchange, . . .	Hampton County, . . .	W. H. Porter, Agawam.	F. C. Burton, East Longmeadow.
Hampton Harvest Club, . . .	Connecticut Valley, . . .	—	Edward M. Burt, East Longmeadow.
Holyoke Milk Producers' Association, . . .	South Hadley, . . .	H. A. Cleveland, Granby.	W. A. Parsons, Southampton.
Littleville Farmers' Association, . . .	—	Emerson B. Rich, Littleville.	L. J. Kelso (Manager), Huntington.
Lowell Market Gardeners' and Fruit Growers' Association, . . .	Lowell, . . .	Frank I. Carter, Tewksbury.	Karl M. Perham, Chelmsford.
Marshfield Co-operative Strawberry Exchange, . . .	—	W. H. Morey, Centre Marshfield.	David Seager, Sea View.
Massachusetts Agricultural Club, . . .	Boston, . . .	Rev. Charles L. Hutchins, Concord.	Gordon Hutchins, Concord.
Massachusetts Alfalfa Growers' Association, . . .	The State, . . .	—	Wilfrid Wheeler, Concord.
Massachusetts Asparagus Growers' Association, . . .	The State, . . .	Frank Wheeler, Concord (vice-president).	Wilfrid Wheeler, Concord.
Massachusetts Creamerymen's Association, . . .	The State, . . .	W. A. Harlow, Cummington.	W. P. B. Lockwood, Amherst.

Massachusetts Dairymen's Association, . . .	The State, . . .	B. W. Potter, Worcester.	W. P. B. Lookwood, Amherst.
Massachusetts Federation for Rural Progress, .	Amherst, . . .	Dr. Kenyon L. Butterfield, Amherst.	Prof. E. L. Morgan, Amherst.
Massachusetts Forestry Association, . . .	Boston, . . .	Nathaniel T. Kidder, 69 Ames Building, Boston.	Harris A. Reynolds, 4 Joy St., Boston.
Massachusetts Fruit Growers' Association, .	The State, . . .	I. I. Margeson, Westwood.	F. Howard Brown, Ferncroft Rd., Marlborough.
Massachusetts Nurserymen's Association, .	The State, . . .	John Kirkegaard, Bedford.	Winthrop H. Thurlow, West Newbury.
Massachusetts Swine Breeders' Association, .	The State, . . .	H. C. Barton, South Amherst.	H. M. Thomson, Amherst.
New England Corn Exposition, Inc., . . .	New England, . . .	W. D. Ross, 90 Front St., Worcester.	F. L. Wear, 1 Beacon St., Boston.
New England Fair,	Worcester, . . .	Walter D. Ross, 92 Front St., Worcester.	B. Durell, 405 Main St., Worcester.
New England Federation for Rural Progress, .	New England, . . .	Hon. E. S. Brigham, Commissioner of Agriculture, St. Albans, Vt.	Dr. Arthur W. Gilbert, Boston Chamber of Commerce, Boston.
New England Federation of Agricultural Students, .	New England, . . .	W. C. Kennedy, Amherst.	Merle R. Young, Storrs, Connecticut.
New England Fruit Show, Inc.,	New England, . . .	J. Lewis Ellsworth, Worcester.	F. Howard Brown, Marlborough.
New England Nurserymen's Association, .	New England, . . .	A. E. Robinson, Lexington.	Richard M. Wynnan, Box H, Framingham.
New England Peach Growers' Exchange, .	New England, . . .	Elijah Rogers, Southington, Conn.	John A. Scheneler, Springfield.
Southern New England Country Fair, Inc., .	Dartmouth, . . .	Elton S. Wilde, New Bedford.	Charles T. Battery, New Bedford.
Stockbridge Club,	Amherst, . . .	R. Walter Hurlburt, Mass. Agr'l College, Amherst.	George L. Goodridge, Mass. Agr'l College, Amherst.
Ware Agricultural and Driving Association, .	Ware, . . .	T. P. Strong, 108 Church St., Ware.	J. E. Kennedy, West St., Ware.
Ware Milk Producers' Association,	Ware, . . .	D. S. Kennedy, R. F. D. 2, Ware.	Allon Winslow, R. F. D. 2, Ware.
Williamsburg Fruit Growers' Association, .	Williamsburg, . . .	Sereno S. Clark, South St., Williamsburg.	E. R. Sylvester, Williamsburg.
Worcester County Harvest Club,	Worcester, . . .	W. C. Jewett, 47 Holden St., Worcester.	Mrs. D. A. Howe, 8 Burncoat St., Worcester.

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